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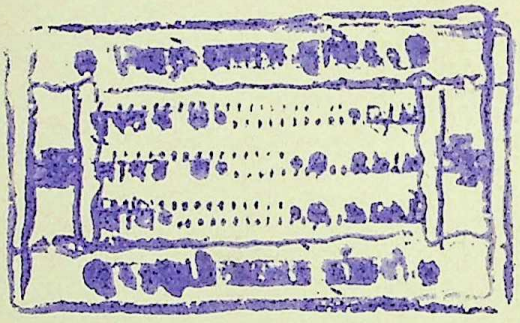

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By H. C. Das-Gupta.

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PREFACE.

It is more than fifteen years ago that I was introduced to the section of the prehistoric antiquities of the Indian Museum by my friend, the late Prof. R. D. Banerjee, who was at that time attached to the Indian Archæological Department. Since that time I had been keeping, for my own use, notes of papers dealing with prehistoric Indian antiquities. When these notes grew to a certain bulk they were shown to Dr. J. Coggin Brown of the Geological Survey of India who advised me to make the list complete and publish it. The original idea was to publish only the titles of the papers concerned, but subsequently, at the suggestion of Mr. Johan van Manen, General Secretary to the Asiatic Society of Bengal, it was thought preferable to add very short summaries of the papers enumerated in the bibliography.

As far as I am aware only three bibliographies dealing with Indian prehistoric antiquities have hitherto been published. One was published in 1867 by Messrs. W. T. Blanford and others, the other by Dr. Ball in 1880, and the third by Sir John Marshall in 1922; while the extremely valuable bibliography of Indian Geology compiled by Mr. LaTouche also includes a number of articles relating to the subject of Indian prehistoric antiquities. Dr. P. Mitra's book on prehistoric India also contains a list of a few articles dealing with the subject of the present bibliography. But these bibliographies are far from complete as none of their authors had in view a bibliography of Indian prehistoric antiquities dealing with all the different phases of the subject. In the present work I have tried my best to make the bibliography as complete as possible, but, from the very nature of the work, it is quite likely that there have been several errors of omission and I shall be glad to be enlightened on this point by anybody. It is needless to add that the summaries of the papers are simply indications of the subjects dealt with in them and should, on no account, be regarded as substitutes for the original papers. In conclusion, I wish to offer my thanks to Mr. N. K. Bose, for the help received in compiling the index.

H. C. Das-Gupta.

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Abbreviations.

AAE—Archivio per l'Antropologia e la Etnologia.
AJ—Asiatic Journal.
An—Anthropos.
AQR—Asiatic Quarterly Review.
AR—Asiatic Researches.
ARADM—Annual Report of the Archæological Department, South Circle, Madras.
ARADN—Annual Report of the Archæological Department of H.E H. the Nizam's Dominions.
ARASB—Annual Report of the Archæological Survey, Bengal.
ARASBu—Annual Report of the Archæological Survey of Burma.
ARASI—Annual Report of the Archæological Survey of India.
ARASMC—Annual Report of the Archæological Survey, Madras and Coorg.
At—Athenæum.
BMHN—Bulletin d'Museum d'histoire naturelle.
BSAP—Bulletin Société d' Anthropologie de Paris.
CJS—Ceylon Journal of Science.
CR—Calcutta Review.
ENPS—Edinburgh New Philosophical Journal.
Fl—Folk-lore.
GM—Geological Magazine.
IA—Indian Antiquary.
IF—Indian Forester.
JA—Journal of Anthropology.
JAI—Journal Anthropological Institute.
JASB—Journal of the Asiatic Society of Bengal.
JASBom—Journal Anthropological Society, Bombay.
JBORS—Journal of the Behar and Orissa Research Society.
JDLCU—Journal of the Department of Letters, Calcutta University.
JDSCU—Journal of the Department of Science, Calcutta University.
JHAS—Journal of the Hyderabad Archæological Society.
JNHSBom—Journal of the Bombay Branch of Natural History Society.
JRAI—Journal of the Royal Anthropological Institute.
JRAS—Journal of the Royal Asiatic Society.
JRASBom—Journal of the Bombay Branch of the Royal Asiatic Society.
JRASC—Journal of the Royal Asiatic Society, Ceylon.
L'A—L'Anthropologie.
M—Man.
MGSI—Memoirs of the Geological Survey of India.
MI—Man in India.
MJLS—Madras Journal of Literature and Science.
Nat—Nature.
NIS—New Imperial Series.
NS—New Series.
NSc—Natural Science.
Pal—Palæontographica.
PASB—Proceedings of the Asiatic Society of Bengal.
PI—Palaontologia Indica.
PISC—Proceedings of the Indian Science Congress.
PRASIW—Progress Report of the Archæological Survey of India, West Circle.
PRIA—Proceedings Royal Irish Academy.
PZSL—Proceedings of the Zoological Society, London.
QJGS—Quarterly Journal of the Geological Society of London.

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RASI—Archæological Survey of India, Reports.
RBAST—Report of the British Association for the Advancement of Science, Transactions.
RGSI—Records of the Geological Survey of India.
SAG—Sitzungsberichte der Anthropologischen Gesellschaft in Wien.
SGM—Scottish Geographical Magazine.
SZ—Spolia Zeylanica.
TEGS—Transaction of the Edinburgh Geological Society.
TESL—Transaction of the Ethnological Society of London.
TLSB—Transaction Literary Society, Bombay.
TRIA—Transaction of the Royal Irish Academy.
VBGAEU—Verhandlung der Berliner Geselschaft für Anthropologie Ethnologie und Urgeschichte.
ZE—Zeitschrift für Ethnologie.
ZLV—Illustrierte Zeitschrift für Länder und Volkerkünde.
Zo—Zoologist.

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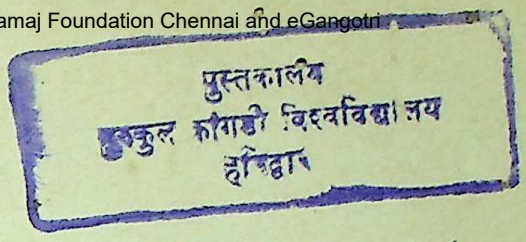

Bibliography of Prehistoric Indian Antiquities.

1 Aiyer, L. K. A. PISC, (2nd), p 33, p 40, 1915

Prehistoric monuments of the Cochin State.

Only the title of the paper was published.

2 Anderson, C. W. JBORS, III, pp 349–362, 1917

(1) Note on Prehistoric stone implements found in the Singhbhum district.

A number of implements from the valley of the Sanjai and the tributary streams is described. The head of a wild horse very much allied to the modern horse is also dealt with. The implements are both chipped and polished.

3 ———— JBORS, IV, pp 298–306, 1918

(2) The rock paintings of Singanpur.

Two caves with drawings in red colour are described. The drawings included hunting scenes, different types of animals, totemistic signs, etc. The local people know nothing about these drawings. An artificially chipped agate flint was also found.

4 Anderson, J. PASB, pp 136–153, 1867

(1) Stone implements found in India.

See W. T. Blanford (3).

5 ———— 1871

(2) A report on the expedition to Western Yunan *via* Bhamo.

On page 414 of this book mention has been made of a neolith found near Suddya in Assam.

6 ———— pp 392–480, 1883

(3) Catalogue and handbook of the Archæological collection in the Indian Museum, Part II, General Archæology.

This part of the Catalogue contains a description of the copper implements found at Pachamba (Hazaribagh), a copper-barbed spear-head or harpoon found near Bithur (off Cawnpur), fragments of a semi-fossil human skull and a few other articles associated with them and possibly found in Gorakhpur district, a few copper implements found in the district of Mainpuri, a number of copper weapons obtained at Fategarh near Farrukabad, articles of various types found at Maheswara (Indore), the copper implements of Gungeria in the district of Balaghat, articles including human remains from the tumuli of Salem, small earthenware vessels, few beads, a curious metallic disc, etc., from the Kistvaens of the Muribetta hill

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(North Coorg), pottery, and iron implements from the tumuli of Coorg, baked clay pottery from Bellary, cinerary urns all containing human bones from Prome, different types of articles including various patterns of pottery, articles of stone, bronze, etc., fragments of human bones and remnants of other animals from different places in Beluchistan.

7 **Andrews**, J. B. SZ, VI, p 75, 1910

Prehistoric fortifications.

The author draws attention to a wall of big-sized boulders around the foot of Mapagala hill and thinks that these structures were used as fortifications in the prehistoric days before the use of metal.

8 **Anno.** JBORS, II, pp 386–387, 1916

Further relics of the copper age.

Three copper celts obtained from the Mayurbhanj State are described. They were apparently used as battle-axes.

9 **Ayyangar**, P. T. S. 1926

The stone age in India, pp 1–55.

This book is a print of Sir S. Subrahamanya Ayyar's lectures delivered by the author. An outline of the old stone age and new stone age cultures in India has been given in the book.

10 **Babington**, J. TLSB, III, pp 324–330, 1823

Description of the Pandoo coolies in Malabar.

An account of the sepulchres with a notice of the finds of pottery, iron implements &c., is recorded. Local traditions connect these structures with (i) the Panduvars, or (ii) the gods and genii, while many describe them as being the tombs of persons gradually reduced to a very small size after the attainment of a certain age. The implements and arrows found in the tombs were used by those persons while their faculties were fully developed.

11 **Bain**, D. S. E. JASBom, II, pp 229–231, 1890

Antiquities of Southern India.

An account of the opening of a cromlech in the Mysore territory is given. Some relics including two iron-swords and gold ornament were found while a skeleton was discovered lying on the slab forming the floor of the grave. The man was not a member of the Pigmy race.

12 **Balfour**, H. MI, pp 97–98, 1901

A spear-head and socketed celt of bronze from the Shan States, Burma.

The types of implements described are very rare. The spear-head is similar in form to many bronze spear-heads of Western Europe, while socketed bronze celts have been found in Yunan.

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13 Ball, V. PASB, pp 127–128, 1865

(1) Stone implements found in Bengal.

A few implements are recorded.

14 ——— PASB, pp 136–153, 1867

(2) Stone implements found in India.

See W. T. Blanford (3).

15 ——— PASB, p 177, 1868

(3) Remarks on a communication of Captain Beeching.

The similarity between the rocks of Manbhum and Singhbhum from which the implements were fashioned is pointed out while it is also remarked that the flakes from Manbhum and Singhbhum are inferior to those from Jubbulpore.

16 ——— PASB, pp 170–175, 1869

(4) On the ancient copper miners of Singhbhum.

The ancient copper workings are all attributed to the Seraks, possibly a race of Bengal Brahmins. These ancient miners were a race of very intelligent people as shown by the remnants of their works in the shape of slag and excavations. The author is not sure whether these miners worked with stone implements.

17 ——— PASB, p 268, 1870

(5) Stone implements discovered in Singhbhum.

A short note.

18 ——— IA, I, pp 291–292, 1872

(6) Stone monuments in the district of Singhbhum, Chota Nagpur.

An account is given of the cenotaph stones as found specially with the Hos.

19 ——— PASB, pp 96–97, 1874

(7) On an ancient perforated stone found in the Satpura hills.

The specimen was found at the Mopani coal-mines and possibly used as a hammer. Reference was also made incidentally to the discovery of a quartzite axe at the Raniganj coalfield.

20 ——— IA, III, pp 171–173, 1874

(8) Visit to the Andamanese "Home", Port Blair, Andaman Islands.

The method of making flakes of flint and glass followed by the inhabitants of the islands is described.

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21 ——— IA, IV, pp 341–342, 1875

(9) Nicobarese hieroglyphics or picture writing.

The civilisation of the Nicobarese is compared with that of the bronze-age man of Europe and an account of their hieroglyplics is given. The author also mentions the presence of a Nicobarese spear-head made of copper though ordinarily iron is used for this purpose.

22 ——— PASB, pp 118–120, 1875

(10) On some stone implements of the Burmese type, found in Pargana Dhalbhum; district of Singhbhum, Chota-Nagpur division.

Implements of the peculiar Burmese type are noted.

23 ——— PASB, p 103, 1875

(11) Remarks on the communication of E. Lockwood.

It has been remarked that the perforated stones are of too soft a material to have been used as hammer-stones. Attention has also been drawn to the perforated hammer-stones of Mopani and similar hammer-stones found in Pennsylvania and it has been added that this similarity may be interesting to those who believe in the Asiatic origin for the North-American Indians.

24 ——— IA, IV, p 117, 1875

(12) Supposed Asiatic origin of the primitive American population.

Attention is drawn to the resemblance existing between a perforated stone found at Mopani (Central Provinces) and some ancient stones found in Virginia and other parts of North America.

25 ——— PASB, pp 120–121, 1876

(13) On an ancient Kitchen-Midden at Chandwar, near Cuttack.

Evidences of the remains of an ancient Kitchen-Midden in the shape of a layer of broken pottery and bones have been found at Chandwar, the site of old Cuttack.

26 ——— PASB, pp 122–123, 1876

(14) On stone implements found in the tributary states of Orissa.

Palæoliths from Dhenkanal, Ungul, Talchir and Sambalpur are described.

27 ——— MGSI, XII[1], pp 155–248, 1877

(15) Geology of the Rajmahal hills.

In this paper (see foot-note, p. 218) attention is drawn to an article of Marchesetti and it is pointed out that the incisions are due to natural causes.

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28 ———— PASB, pp 159–160, 1877

(16) Remarks on the communication of W. T. Blanford (12).

Attention is drawn to the occurrence of a number of mounds with fragments of ornamental pottery in the Khetran valley near the borders of Afganisthan.

29 ———— RBAST, pp 588–589, 1878

(17) On some objects of ethnological interest collected in India and its islands.

A few stone implements bearing a very close similarity with some quite well-known types were exhibited.

30 ———— PASB, p 125, 1878

(18) Two stone implements from Parishnath hill (District Hazaribagh).

Two neolithic implements are described.

31 ———— PRIA, 2nd, Ser. Vol. I, Polite Lit. and Antiq, pp 388–414, 1879

(19) On the forms and geographical distribution of ancient stone implements in India.

Here is to be found a comprehensive account of the implements obtained in different parts of India together with the uses to which they were put. In the map showing the distribution of the implements, the author discards the terms neolithic and palæolithic, and uses (1) polished celts, (2) chipped quartzite, and (3) flakes and cores instead, but the author is not certain 'whether the flake-makers or the quartz-chippers were the more ancient'. It has been shown that the three types of implements have their well-defined areas of distribution and 'that in Western Bengal and the Central Provinces, *i.e.*—the most central parts of the peninsula, there is a considerable mutual overlap'. According to the author, this 'central area must be regarded as including a point of convergence rather than of divergence, of immigration rather than of emigration'.

32 ———— RBAST, pp 394–395, 1879

(20) On the forms and geographical distribution of ancient stone implements in India.

The author points out that the Indian stone implements may be grouped into three classes which are found over independent geographical tracts overlapping one another towards the centre of the Peninsula.

33 ———— pp i–xv, pp 1–720, 1880

(21) Jungle life in India.

In this book occasional references are to be found to the occurrence of sepulchral monuments and stone implements while in an appendix (B) of the volume there is a short note

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entitled 'On the forms and geographical distribution of stone implements in India'. In this short note, among other things, it is suggested that the grubbing of the wild roots out of the ground and the scraping of skin were among the works in which they were utilised. Agreement between the author's theory and that of Dr. Caldwell regarding the successive waves of immigration into India is pointed out.

34 ———— PASB, pp 120–121, 1881

(22) An ancient stone implement made of magnetic iron ore.

A short note of an implement found in the Narbada valley.

35 ———— PASB, pp 192–194, 1888

(23) Ancient stone implements in India.

An explanation of a few personal points raised in an article by Mr. Foote.

36 **Banerjee**, R. D. ARASI, for 1922–1923, pp 102–104, 1925

(1) Exploration and research Western Circle, Sind, Mahen-jo-daro.

A short account of the Mahen-jo-daro excavations and finds, the latter including flint scrapers, cores, bouchers and funeral urns of various sizes and shape, sand miniature necropolitan pottery.

37 ———— ARASI for 1924–1925, p 102, 1927

(2) Neolithic implements from the Abor country.

A short note of a neolithic adze which is looked upon by the people of the country as a 'gift of the gods and used for application to sores, &c.'.

38 **Barron** (Lieut.). JAI, I, pp lxii–lxiii, 1872

Note on stone implements from the Naga Hills.

A few neoliths are described. They are usually found a little below the surface of the ground. According to the Nagas, these stones fell from the sky and are of three different types, an opinion which is also shared by the Shans.

39 **Beames**, J. IA, I, pp 355–356, 1872

On a copperplate grant from Balasore (A.D. 1483).

The plate bearing the inscription recalls the shape of copper implements.

40 **Beeching** (Captain). PASB, p 177, 1868

Notes on some stone implements found in the district of Singbhoom.

A number of chipped implements is noted. They were found usually either lying loose in gravel or in sandy depression and ravines near the rivers (off Chaibasa and Chakradharpur).

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41 **Belgar**, J. D. ARASI, VIII, pp 1–213, 1878

Report of a tour in the Bengal Provinces, 1872–73.

Attention is drawn to rude stone circles near the foot of the Pretsila hill (Buddha Gaya) which are traditionally attributed to the Kols.

42 **Belcher**, Sir, E. RBAST, p 129, 1869

On stone implements from Rangoon.

(Only the title of the paper was published.)

43 **Bhandarkar**, D. R. CR, pp 21–39, 1920

The Indian alphabet.

Reference is made to two neoliths bearing letters some of which resemble those prevalent in prehistoric Egypt and some are very closely like those of the *Brahmi lipi* of the Asoka period.

44 **Bhattacharya**, R. K. Appendix II to Prehistoric India by P. Mitra, pp 256–263, 1923

Indian rostrocarinates.

Fifteen rostrocarinates are described.

45 **Bidie** (Surgeon-General). JRAS, XIX, pp 693–695, 1887

Prehistoric graves near Pallavaram.

Reference to an article published by the author in the Madras Mail in which a short description of the finds in the Pallavaram burial ground is given. No stone implements are found in these dolmens and the articles found therein "plainly point to some glimmering idea of a future life analogous to the present, having been entertained by the dolmen-builders'.

46 **Blanford**, H. F. PASB, XXXIII, pp 575–576, 1864

(1) Some portions of a semi-fossil human skull, found some years since, unlabelled and without any note of locality, in the Society's Museum.

The specimen consisted of the occipital and parietal bones and a portion of the frontal, with parts of upper and lower jaws, and was filled up with a mass of shells of the genus *Unio*, also semi-fossilized. The matrix of the specimen resembled that of certain of the Narbada bone deposits.

47 ——— pp 1–52, 1866

(2) Prehistoric man..No. 1. On the early stone-age in Western Europe and India.

A general treatise on the subject dealing with the growth and development of prehistoric archæology including a short account of some stone implements found in India.

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48 ———— PASB, pp 59–60, 1868

(3) Remarks on the presentation by H. A. Mangles.

Reference was made to the discovery of a neolithic hatchet in Coorg. It was pointed out that the specimen exhibited, was the first implement of the neolithic type ever recorded from S. India. The absence of any bronze age relic in India was noted and it appears that in this part of India the stone age was immediately followed by that of iron.

49 **Blanford,** W. T. PASB, pp 79–80, 1865

(1) Remarks on the paper by Lieutenant Swiney.

The opinion was expressed that the specimens did not admit of any decided inference as to their artificial nature.

50 ———— PASB, pp 230–234, 1866

(2) The worked agates of the early stone period from Central India.

The worked implements are of two types—flakes and cores. The flakes are usually of the type found in Europe, while the cores are of two principal forms—subconical and sub-prismatic. They are of an extremely small size.

51 ———— PASB, pp 136–153, 1867

(3) Stone implements found in India.

A general discussion regarding the Indian stone implement containing a tabulated statement of all finds with a note regarding their character, material, locality, positions, discoverer, and reference, etc.

52 ———— RGSI, I, pp 60–65, 1868

(4) Notes on route from Poona to Nagpur, *via* Ahamednuggar, Jalna, Loonar, Yeotmahl, Mungali, and Hinunghat.

The occurrence of chipped agate flakes near Moonghe is recorded. The implement was found *in situ.*

53 ———— PASB, p 136, 1866

(5) Remarks on the communication of V. J. Carey.

Attention was drawn to the similarity existing between Mr. Carey's specimens and those found among the relics of the later stone age and bronze age of Europe.

54 ———— PASB, pp 53–54, 1869

(6) Remarks on the communication by R. E. Oakes.

Attention is drawn to the fact that these implements are abundant in small restricted localities, and in such a manner as to leave it to be inferred that the spot where they were found was a place used for the manufacture of the agate flakes during a considerable period.

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55 ———— PASB, p 179, 1871

(7) Chipped quartzite implements found about 40 miles west of Bhadrachalam on the Godavari.

The implements are of the type found in the French and the British gravels. The find-spot was possibly a factory.

56 ———— RGSI, V, pp 23–24, 1872

(8) Description of the sandstone in the neighbourhood of the first barrier on the Godavari and in the country between the Godavari and Ellore.

The find of a large number of chipped implements of the Abbeville type is recorded. The implements are all of white quartz.

57 ———— PASB, pp 134–136, 1875

(9) Specimens of flint-cores and flakes from Sakhar and Rohri on the Indus, Sind.

It has been suggested that the cores found on the Indus were manufactured by a people different from that who chipped the flakes on the hills around.

58 ———— PASB, p 174, 1876

(10) Remarks on Captain Mockler's paper.

The remains are indicative of two different ages.

59 ———— PASB, pp 157–159, 1877

(11) A collection of pottery and various implements of stone, including flint knives, together with agate beads, copper ornaments, coins, etc., found by Major E. Mockler, Political Agent at Gwadar, among the ruins of dwelling places and tombs in various parts of Makran (Baluchistan).

A general description of the articles has been published with the figures of a few of them. Some of the marks on the pottery look like letters, but they may be ornamental.

60 ———— PASB, pp 190–191, 1877

(12) Remarks on a paper by W. King.

Attention is drawn to two circumstances which should be taken into consideration before the Christian origin of the monoliths is admitted. These are (i) the absence of any inscription, of any distinctive sculpture, or of any Christian symbol except the cross and (ii) the association of the crosses with cromlechs and stone-circles.

61 ———— Nat, LI, p 608, 1895

(13) The Burmese chipped flints Pliocene not Miocene.

Attention is drawn to the fact that the bed with the chipped flints in Burma is Pliocene and not Miocene in age.

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62 **Bloch, T.** ARASB for the year ending with April 1905, pt II, pp 11–15, 1905

Excavations at Lauriya, Betiah subdivision, district Champaran.

Reference is made to the discovery of a coffin of lead or of iron with human skeleton in a mound of the locality. Four mounds are described, two of which contain human remains with gold leaf. The author gives his own views regarding the erection of the mounds.

63 **Bloomfield, A.** PASB, pp 131–134, 1870

Eight pieces of silver and seventeen pieces of copper utensils, found near the village of Gungeria, Balaghat.

A number of copper axes is described. These implements are all produced by manual labour and none of them is a cast.

64 **Bodding, Rev. P. O.** JASB, LXX, pt III, pp 17–22, 1901

(1) Ancient stone implements in the Santal Parąganas.

An account is given of the Santals' superstition regarding stone implements while neolithic implements—axes, hammers, arrow-heads, etc.—are described.

65 ——— JASB, LXXIII, pt. III, pp 27–31, 1904

(2) Shoulder-headed and other forms of stone implements in the Santal Paraganas.

A few neolithic implements including shoulder-headed and perforated types are described and the significance of the occurrence of the shouldered implements is also pointed out.

66 ——— MI, I, p 232, 1921.

(3) Indian Palæoliths.

The author raises the question whether some implements apparently of a palæolithic type should be really looked upon as such or as unfinished neoliths.

67 **Bose, P. N.** JASB, LI, pt I, pp 226–229, 1882

Note on some earthen pots found in the alluvium at Mahesvara (Mahesar).

Remains of fragments of charcoal, pottery, human and cattle bones, wells, etc., are described from an alluvial bed. The remains are supposed to be connected with some non-Buddhist Scythian tribe.

68 **Boswell, J. A. C.** IA, I, pp 149-155, 182–187, 1872

On the ancient remains in the Krishna district.

In this paper, among other subjects, the author describes the sepulchral tumuli, etc., in the neighbourhood of Karunpundi. The local tradition connects these cromlechs with an

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extinct race of pigmies. It appears that the dead body was first burnt and the bones were then collected and heaped in the stone cells.

69 **Boule, M.** L'A, VI, p 358, 1895

(1) L'âge des silex taillés de Burma.

Attention is drawn to the fact that the beds in which the chipped flints were found by Noetling are Pliocene in age and not Miocene.

70 ——— L'A, VI, p 617, 1895

(2) L' Homme miocène de Burma.

Reference is made to an article by R. D. Oldham in which a considerable amount of doubt has been thrown on Dr. Noetling's discovery.

71 ——— L'A, XVIII, p 717, 1907

(3) Instruments Paléolithiques dans les cavernes de Ceylan.

This short communication only contains a reference to an article of A. C. H. published in Nature, May 23, p. 82, 1907.

72 ——— L'A, XXVI, pp 397–410, 1915

(4) Les singes fossiles d' l' Inde d'après M. Pilgrim.

A review of Dr. Pilgrim's paper on the Siwalik Primates including *Sivapithecus indicus* Pilgrim published in the Records of the Geological Survey of India, Vol. XLV, pt. 1, 1915.

73 ——— L'A, XXVI, p 191, 1915

(5) Silex pygmées de Ceylan.

Reference is made to an article published in Spolia Zeylanica (1914) where at least ten different types of pigmy flints were described by Hartley.

74 ——— L'A, XXVI, p 304, 1915

(6) Peintures préhistoriques dans une caverne de l' Inde.

The prehistoric paintings on the walls of a cave near Raigarh (C.P.) are referred to. These are the oldest paintings discovered in India.

75 ——— L'A, XXX, p 620, 1920

(7) L'âge de la pierre à Ceylan.

This is only a reference to an article published by Wayland in Spolia Zeylanica, Vol. XI, 1914.

76 ——— L'A, XXXIV, p 606, 1924

(8) Préhistoire de l' Inde.

Reference is made to an article of Sir John Marshall published in the Illustrated London News of the 20th September, 1924, dealing with the interesting discoveries made at

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Mohen-jo-daro in Sind and at Harappa in the Punjab. A very short note of the different finds is given and the opinion of Sir John Marshall is quoted according to whom the culture, the evidence of which has been found in the valley of the Indus, does not appear to have been affected by any external influence. Attention has also been drawn to two subsequent contributions, one by Prof. Sayce (27th Sept., Illustrated London News) according to whom the seals are practically identical with the accountancy tables found at Suse and show a connection between these two countries during the third millenium before the Christ, and to the other by Messrs. Gadd and Sydney Smith (4th Oct., Illustrated London News) in which it has been suggested that the Indian manufacturers of the seals were in direct contact with the Sumarians from whom they borrowed their style and writing at about 3000–2800 B.C.

77 **Bowring, L.** PASB, pp 59–60, 1869

Cromlechs in Coorg.

A short note of a few cromlechs known locally as *Pandava Kalier* (stone) is given. Nothing is known regarding their past history.

78 **Brahmachari, U. N. and S. C.** JASB, N. S. XXII, p 135, 1926

Two neolithic stone implements found in a tank at Jamalpur (Monghyr).

The specimens were obtained during the excavation of a tank. They are of the same rock, a very fine-grained schistose phyllite. Both the specimens are described.

79 **Branfill, R. B.** JASB, XLIX, pt 1, pp 8–10, 1880

(1) Rude megalithic monuments in North Arcot.

A short account of the different types of sepulchral monuments is recorded.

80 ——— IA, X, pp 97–100, 1881

(2) Old slab-stone monuments in Madras and Maisur.

The paper gives an account of a peculiar type of the slab-stone monuments found in the district of Madras and Maisur border on the Eastern Ghats where the enclosed kistvaens are surrounded by circles of erect thin slabs of stones which are alternately flat-topped and round. The contents of these kistvaens are human bones, pottery, and many legged terra-cotta coffins. The pottery is usually scratched with some symbols.

81 ——— IA, X, pp 1–12, 1881

(3) On the Sâvaṇdurga rude stone cemetery, Central Maisur.

A number of kistvaens is described. The contents include one human skeleton which must have been in a bent posture originally. A large number of pottery and iron weapons was also met with. The potteries very often show some markings

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scratched upon them while the *Svastika* symbol appears to have been scratched upon the vase. One of the kistavaens with two bowls of ashes may be looked upon as the case of a cremation of a man and his wife who became a *Sati.* The local tradition connects the kistvaens with the Pandu-folk, a pigmy race that peopled the country before the advent of the present inhabitants.

82 Breeks, J. W. (the late). pp i–vii, pp 1–137, 1873

An account of the primitive tribes and the monuments of the Nilghiries.

In this work one complete section is devoted to the description of the cairns, kistvaens, barrows, cairns, cromlechs, etc.,—. (Chapter VI). A number of these relics was opened and the Appendix C is a descriptive catalogue of all articles found in the cairns, cromlechs, etc.

83 Brown, J. A. JAI, XVIII, pp 134–139, 1889

On some highly specialised forms of stone implements, found in Asia, North Africa, and Europe.

In this paper attention has been drawn to the neolithic diminutive instruments (pigmy flints) which are found in many parts of the World including Northern India. Some of them might have been used for tattooing purposes and these implements are likely the handiwork of 'a particular race, which, emanating from Central India, migrated and spread out in a north-westerly direction through Syria to the Crimea, along the north and south shores of the Mediterranean to France and Portugal'. Remnants of the race may be found in Britain.

84 Brown, J. C. JASB, N.S. X, pp 107–109, 1914

(1) Grooved stone hammers from Assam and the distribution of similar forms in Eastern Asia.

A detailed account of the distribution of grooved hammer-stone in different parts of India is followed by a general account of the distribution of a similar type of implements in the other parts of Eastern Asia. The existence of such implements in parts of N. America is also noted and it is remarked that, 'There is no evidence to prove that the grooved stone axe which only occurs sporadically in Eastern Asia, did not evolve as an independent unit in the N. American culture area, but on the other hand, the lack of evidence in this particular case does not lessen the probability that in certain other archæological types America borrowed from Asia'.

85 ——— JBORS, I, pp 125–126, 1915

(2) Note on a copper celt found in the Palamau district.

The form of the celt is very primitive. It may be regarded as a link between the Gungaria and the Hazaribagh specimens.

86 ——— JBORS, I, pp 129–130, 1915

(3) Note on ancient pottery found in the Munda country.

A few fragments have been described. These are tentatively supposed to belong to the early iron period.

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87 ———— JBORS, I, pp 131, 1915

(4) Note on cinerary urn found in the Munda country.

Two urns are described with their contents which include human bones, bracelets, anklets, and rock-crystal beads.

88 ———— JBORS, I, pp 127–128, 1915

(5) Note on two copper axes.

These are quite like the Palamau celts. The specimens from the two localities are probably the handiwork of the same race of people of the copper culture period.

89 ———— ARASI for 1913–1914, p 247, 1917

(6) A prehistoric axe from the Kurram Agency.

The possession of solid lugs is the great peculiarity of this axe, though, in other respects, it recalls the specimens recorded from Gungaria, Spain, and Ireland.

90 ———— ARASI for 1913–1914, p 246, 1917

(7) A prehistoric copper celt from Palamau.

The celt is looked upon as being intermediate between the Gungaria and the Hazaribagh specimens.

91 ———— 1917

(8) Catalogue raisonné of the prehistoric antiquities in the Indian Museum at Calcutta, pp 1–155, (with plates). Ed. (Sir) J. Marshall.

The book contains an account of the Museum specimens with an introduction. The specimens are divided into palæoliths, neoliths, copper-age, and iron-age antiquities. A detailed geographical distribution of the specimens together with their description is given.

92 **Brown, P.** 1923

Notes on the prehistoric cave paintings at Raigarh. Appendix I to prehistoric India by P. Mitra, pp 245–255.

It contains a short idea of the paintings which have been divided into three groups as regards their position. The paintings are of two types and possibly of two periods while the subjects painted are (*a*) hunting scenes, (*b*) groups of figures, (*c*) picture writings or hieroglyphics, and (*d*) drawings of different types of animals. The technique is also described. The pigments used was hæmatite.

93 **Burgess, J.** IA, III, pp 306–308, 1874

(1) The dolmens at Konur and Aiholli.

Dolmens occurring in the neighbourhood of Konur (Belgaum) and Aiholli (Kaladgi) are described.

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94 ———— RASI, (NIS), pp 1–45, 1874

(2) Report on the first season's operation in the Belgaum and Kaladgi districts.

A short note of a large number of dolmens at Konur (Belgaum) is given.

95 ———— JRAS, pp 925–929, 1901

(3) Remarkable antiquarian discovery in Southern India.

A short account of the important excavation works carried out by Mr. Rea is recorded. The finds include burial urns, pottery, iron implements, etc.

96 **Burt**, T. S. JASB, II, p 648, 1833

Exhibition of specimens of the fossil bones, kankar, and rocks extracted from the bed of the Jumna.

The fossils include the tusk of an elephant and tooth of a horse. Associated with these were a part of the human jaw and some other bones of recent age.

97 **Cadell**, T. SGM, V, pp 57–73, 1889

The Andamans and Andamanese.

According to the author the Andamanese are living in the stone age.

98 **Caldwell** (the late Dr.). JAI, XXIX, pp 290–292, 1899

Sepulchral urns in Southern India.

A short and general account of these urns and their contents is given. The names given to these urns in the Tamil country are discussed and it has been suggested that they are the relics of the ancestors of the people found in the localities where they are met with.

99 **Caldwell**, The Rt. Rev. R. IA, VI, pp 80–83, 1877

(1) Explorations at Karkei and Kâyal.

An account of the finds at Karkei and Kâyal is given. The Karkei antiquity includes three sepulchral urns, one of which contains a complete set of human bones including a perfect skull. The Kâyal find did not produce anything of importance. According to the local traditions persons belonging to a race of pigmies were buried in the urns.

100 ———— IA, VI, pp 279–280, 1877

(2) Sepulchral urns in Southern India.

The author gives an account of the urns found in Tinnevelly, Madura, and Travancore and refers to a local tradition which connects these urns with the dwelling-places of very old persons in the *Treta-Yuga* when people never died, but the older they grew the smaller they became.

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101 Camiade, L. A. MI, IV, pp 83–105, 1924

(1) Pigmy implements from the lower Godavari.

Different types of pigmy flints are described, *viz.*, flat-butted, adze and gouze heads, axe heads, crescents, laterally edged flakes, pointed flakes, chisel-edged flakes, scrapers, etc. According to the author the Godavari pigmy culture began in the early neolithic period and came up to comparatively recent times. It has also been suggested that the implements were the artifacts of the 'new submerged Nigritos of India'. In a very few pigmy camps species of pottery were found.

102 ——— MI, VI, pp 174–181, 1926

(2) Notes on the exploration of the Kurnool bone caves.

A few suggestions regarding the future exploration of the caves.

103 ——— MI, VII, pp 105–111, 1927

(3) Evolution of Palæolithic Art in India.

According to the author many of the Palæolithic cultural stages represented in Western Europe are also to be found in India and they follow the same course of development. The author is also of the opinion that India was far more densely populated in Palæolithic times than Europe.

104 Campbell, Rev. A. JBORS, II, pp 85–86, 1916

Note on the occurrence of copper celts in Manbhum.

A short note about the implements is to be met with.

105 Carey, J. J. PASB, pp 238–239, 1871

On the stone circles near Khaiwarra, Wardha district.

The stone circles have been described. One of the mounds was opened and the finds in them include pottery, copper, and iron utensils as also teeth of horse.

106 Carey, V. J. PASB, pp 135–136, 1866

A perforated stone found on a 'chaboutra' at Jubbulpore.

A number of celts is noted. Perforated stones are also reported.

107 Carlleyle, A. C. L. RASI, IV, pp 93–247, and 253–256, 1874

(1) Report on Agra, with notices of some of the neighbouring places.

Reference is made to a number of cairns in the neighbourhood of Jagner. They are supposed to be the sepulchral remains of the aborigines of the country while allusion has been made to the popular tradition in connection with their origin.

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108 ———— RASI, VI, pp 1–256, 1878

(2) Report of a tour in Eastern Rajputana in 1871–72 and 1872–73.

Attention is drawn to the cairns found at Khera (pp. 13–15), Satmas (pp. 33–39), Machari (p. 88), and Deosa (pp. 104–108) and to some prehistoric antiquities found at Dhand (pp. 160–161). At Khera, cairns of two sizes were distinguished and the larger of them consisted of two types, round-topped or tumulus-shaped and flat-topped. Ashes of calcined bones including fragments of calcined bones were also met with. A large number of cairns was observed in the neighbourhood of Satmas. These cairns were of three different types :—(1) round-topped or tumulus-shaped solid, (2) flat-topped four-sided, and (3) cromlech. The remains found in a few of these cairns prove that they were used for sepulchral purposes. The cairn found at Machari was of oblong shape and had some bone ash, a stone ball, and a few flakes of stone inside it. Several cairns, a large mound of earth, and a number of stone circles were found at Deosa. Some of the cairns contained ashes with a few fragments of calcined bone and a little charcoal, while in one or two instances a pigmy flint, a stone ball, and a possible rude stone-borer were met with. The earthen mound was excavated and a number of strata was exhibited. Human bones, relics of ancient pottery, etc., as also flakes of flinty quartzite were found. The greater part of the human bones was discovered in a roundish-shaped earthen vessel covered with a lid at the top. The stone circles were of different dimensions and it has been suggested that there must have been a meaning in these dimensions. The antiquities found at Dhand include fragments of old pottery, several flakes of flinty quartzite, and two rude implements of the same material.

109 ———— RASI, XII, pp 1–230, 1879

(3) Reports of tours in the Central Doab and Gorakhpur in 1874–75 and 1875–76.

Mention is made of the mounds at Bajera Khera near the Koel in Aligarh. The mound is of great antiquity and the finds include remnants of old pottery (pp. 7–9).

110 ———— PASB, p 49, 1883

(4) Notes on lately discovered sepulchral mounds, cairns, caves, cave-paintings, and stone implements.

A reference to the finds in Mirjapur, Baghelkhond, Bundelkhand, etc.

111 ———— RASI, XVIII, pp 1–111, 1883

(5) Report of a tour in the Gorakhpur district in 1875–76 and 1876–77.

A reference is made to the existence of a number of small mounds or barrows in the neighbourhood of the great ruined Stupa of Ramabhar. These barrows are supposed to be sepulchral. (P. 98).

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112 ———— RASI, XXII, pp 1–122, 1885

(6) Report of tours in Gorakhpur, Saran, and Ghazipur in 1877–78–79 and 80.

Mention is made of a number of mounds near Lauriya, the excavations of which show the presence of pottery fragments, bone ash, pieces of charcoal, and a few particles of iron among the antiquities obtained. Mounds are also reported from the west of Lauriya and very likely these mounds were the 'receptacles of the scattered ashes of many', but not the tombs of persons. It has been suggested that 'the tumuli or barrows both at and in the neighbourhood of Lauriya Navandgarh, are .....the Wajjian Chetiyani or Chetiyas of the Vrijis, referred to by Buddha in a conversation with Ananda'.

113 **Cartailhac, E.** L'A, XIV, pp 619–620, 1903

Dolmens des Indes.

A short notice is given of the dolmens met with at Teppakulum, Trichinapoli.

114 **Carter, G. E. L.** JASBom, XI, pp 893–896, 1919

(1) A few stone implements of India.

The author has divided his finds into three groups and builds up a hypothesis linking his finds with those of others.

115 ———— Mem, Arch, Sur, of Kashmir, No. 2, Srinagar. (Rev. J. R. A. S. 1926, p 163.), 1924

(2) The stone age in Kashmir.

116 **Chanda, R. P.** JBORS, IX, pp 262–265, 1923

(1) Note on the discovery of neolithic writing in India.

The evidence in support of the neolithic writing in India is reviewed and it is pointed out that the conclusion is based upon insecure grounds.

117 ———— 1924

(2) Note on prehistoric antiquities including antiquities from Mahen-jo-daro.

This is a pamphlet written on the occasion of H.E. the Viceroy's visit to the Indian Museum on December 27, 1924, and contains a short account of the old stone age, new stone age, copper age, and Mahen-jo-daro antiquities found arranged in the Indian Museum, with a discussion of the Sumerian affinities of the Mahen-jo-daro antiquities.

118 ———— ARASI for 1923–24, pp 100–101, 1926

(3) Indian Museum.

Three sets of neolithic implements are recorded. They are from Pakokku (Upper Burma), Rajgir (Patna), and Mayurbhanj State. The Mayurbhanj State implements include a shouldered celt.

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119 **Clarke**, C. B. JAI, III, pp 481–493, 1874

The stone monuments of the Khashi hills.

Besides giving a general account of the monuments, the author draws attention to the three classes in which they may be arranged from an ethnological point. These are (*a*) the funeral pyres, (*b*) the kists containing the pots of ashes, and (*c*) the monumental groups.

120 **Clarke, H.** RBAST, p 171, 1875

On prehistoric culture in India and Africa.

From linguistic considerations, the author has maintained a cultural community between India and Africa.

121 **Cockburn, J.** JASB, XLVIII, pt II, pp 133–143, 1879

(1) Notes on stone implements from the Khasi hills, and the Banda and Vellore districts.

A number of polished and chipped flints is described.

122 ——— PASB, pp 125–126, 1883

(2) A short account of the Petrographs in the caves or rock-shelters of the Kaimur range in the Mirzapur district.

A number of caves in the eastern half of the Mirzapur district is noted. The caves are divided into five groups. Some of the drawings in the caves are described. These drawings do not appear to be more than six or seven centuries old and many of them may be even of a later date. The drawings were executed by hæmatite and the caves also yielded pieces of pottery and fragments of split and charred bones.

123 ——— JASB, LII, pt II, pp 56–64, 1883

(3) On the recent existence of *Rhinoceros indicus* in the North-Western Provinces; and a description of a tracing of an archaic rock painting from Mirzapur representing the hunting of this animal.

Reference is made to the discovery of tooth fragments of *R. indicus* and of other mammals in the ravines of the Ken river while attention is also drawn to archaic petroglyphs representing the hunting of a rhinoceros, the best among the lot being the painting discovered at Ghormangur (horse-cave) where the hunters are supposed to have used stone-tipped implements.

124 ——— PASB, pp 141–143, 1884

(4) On the durability of hæmatite drawings on sandstone rocks.

Attention is drawn to the scepticism expressed in connection with the author's paper (see No. 2) where some antiquity was demanded for petrographs which were made with hæmatite. The author expresses the opinion that any estimate of the age

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of the drawings based on their state of preservation is worthless and draws attention to other factors which point to a higher antiquity for the drawings in the caves.

125 ———— JAI, XVII, pp 57–65, 1888

(5) On palæolithic implements from the drift gravels of the Singrauli basin, South Mirzapur.

A large number of implements is referred to. They were all obtained from a well-defined gravel bed, found throughout the alluvial basin of the Singrauli, lying between the alluvium and the Talchir rocks. No animal fossils were found.

126 ———— PASB, pp 88–90, 1894

(6) A perforated diorite plug.

A genuine diorite celt with a forged perforation is described from the Banda district.

127 ———— JASB, LXIII, pt. III, pp 21–27, 1894

(7) On flint implements from the Kon ravines of South Mirzapur.

Reference is made to a few neolithic graves while a number of implements both chipped and polished is described.

128 ———— JRAS, pp 89–97, 1899

(8) Cave drawings in the Kaimur Range, North-West Provinces.

The author draws attention to the paintings and petroglyphs which are met with rather abundantly in the caves of the Kaimur Range. In many of these caves other evidences of prehistoric antiquity, *e.g.* caves, arrow-heads, celts, pottery, charred bones, etc., were also found. The drawings are fairly elaborate and the writing on the rock appears to be some early form of Hindi. These paintings and drawings are supposed to be among the most ancient antiquarian records in India.

129 Cole, G. A. J. NSc, Vol. VII, p 295, 1895

Miocene man in Burma.

A contribution to the Noetling—Oldham controversy regarding the *in situ* character of the Burma flint implements.

130 Cole, R. MJLS, VII, pp 130–133, 1838

Note on certain mounds of a scoriaceous character found near Bellary.

A short description of the mound as also some reference to the traditions connected with its origin are given.

131 Cole, R. A. PASB, pp 184–186, 1868

(1) Cromlechs in the vicinity of Veerajenderpett.

A large number of cromlechs is described. The finds in them include several antique-shaped highly glazed urns, pots, and iron weapons. No bones were found.

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132 ———— PASB, pp 151–155, 1868

(2) On the cromlechs in Coorg.

A few cromlechs are described. One of them is a double cromlech. Some of the cromlechs contained fragments of earthen vessels, pieces of charcoal, etc. It has been suggested that the bigger cromlechs might have been used as the dwelling place and the smaller stone cist and the tumuli as the sepulchral monuments of the prehistoric people.

133 ———— PASB, pp 243–245, 1868

(3) The cromlechs in Coorg.

In Coorg the cromlechs are known as Pandu-pare (*i.e.* stone of the Pandus) as also Pandu-mane (*i.e.* house of the Panduras —a legendary pigmy race). Both Kistvaens and dolmens are found in Coorg. One of the cromlechs contained a human jaw with two teeth on.

134 ———— PASB, pp 54–58, 1869

(4) Memorandum on the cromlechs found in Coorg.

Some five hundred cromlechs within a distance of nearly half a mile are referred to and the dimensions of a few of them are given. Remains of antique pottery, bones, and iron implements are found in them. It is suggested that some of the structures might have been used as residences. A few cromlechs are referred to as having been used as altars. The cromlechs are called locally as *Pandu-parre* (*i.e.* the stone of the Pandu) and *Pundramane* (*i.e.* the house of the Pundarus, a legendary pigmy race).

135 ———— PASB, pp 202–203, 1869

(5) On cromlechs in Southern India.

This contains a short account of some cromlechs found on the top of the Moory Betta hill in North Coorg.

136 ———— TESL, NS, VII, pp 299–304, 1869

(6) On the discovery of cromlechs on Southern India.

The same as articles 1 and 2 taken together with a few additional drawings.

137 ———— IA, II, pp 86–88, 1873

(7) Cromlechs in Maisur.

A general account of the Maisur cromlechs is given. According to the author, these cromlechs are 'actual structures consisting of a large flagstone of granite at the bottom with four similar slabs (all hewn and made to fit) forming a stone cist, the superincumbent stone being a large unhewn block of granite' and thus quite different from the Pandu-Kolis of Malabar which are 'chambers purposely excavated in the rock below the surface'.

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138 Colvin, B. W. PASB, p 262, 1868

The copper weapons found at Mainpuri.

The specimens were found littered together in a heap without any order, and not enclosed in any vessel or receptacle. They were at no great depths below the surface.

139 Congreve, H. MJLS, XIII, pt 2, pp 47–51, 1844

(1) Some observations on a remarkable cromlech near Pullicondah in the Carnatic.

The cromlech is described and its origin is attributed to a celtic Scythian race that inhabited India prior to the advent of the Hindus.

140 ——— MJLS, XIV, pp 77–146, 1847

(2) The antiquities of the Neilgherry hills, including an inquiry into the descent of the Thautawars or Todas.

Attention is drawn to the great resemblance existing between the Thautawar and the Scythian barrows with their contents. Detailed description of a cairn found in the neighbourhood of Coorg with all the antiquities found therein is given. Reasons are put forward for entertaining the opinion that the tumuli under discussion were erected by the ancestors of the Thautawars, and the author concludes that the Thautawars originated from the ancient Scythian stock, *i.e.* the Celtic Scythians who were the aborigines of the plains of India. The author, however, does not ignore the possibility that they might have been erected by a Pandyan people who had occupied the hills before the Thautawars came in. Attention is drawn to the striking resemblance that exists between an ancient Celtic and a Thautawar dairy. The author gives his reason for holding that the Thautawar religion is Scythian with a tinge of Buddhism. Single upright stones marking burial places occur on the Nilghiries as in the church-yards of England. Buffalo superstition of the Thautawars finds its parallel in the full-faced idols of the ancient Britons. Cromlechs of Achenny (Nilgiri hills) are described while kistvaens with a circular aperture on the eastern wall are also noted. Reference is also made to a tolmen (hole of stone) excavated rock-basins, and a tor (locally known as Pipacul or barrel-stone) which are relics of the Druidical religion.

141 ——— MJLS, XXII, pp 205–212, 1861

(3) Remarks on the Druidic antiquities of the South of India.

Attention is drawn to the resemblance existing between the cromlech at Palicondah (Carnatic) and a Druidical altar or cromlech found in Spain, while it is also pointed out that the cromlechs of South Malabar as a class have something in common with the cairns formed in Wales and Cornwall. Similar analogies between the S. Indian and the Druidical antiquities are also to be found in the tolmens (holes of stone), upright stones, piles of circular stones, and sepulchers. Oval-shaped beads of crystals pierced longitudinally are compared with the amulets of the Druids found in the barrows of England.

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142 ———— MLJS for the year 1878, pp 150–168, 1879

(4) On druidical and other antiquities between Mettapoliam in Coimbatore and Karnul on the Tungabhadra.

A number of cromlechs and cairns is described. According to the author, these cromlechs were built by a migratory band from Asiatic Scythia who, after having crossed Persia and Baluchistan, settled down in S. India. Both the closed and the perforated cromlechs are dealt with. A cromlech with sculptures at its back is also noted.

143 **Crooke, W.** JAI, XXVIII, pp 220–248, 1899

The hill tribes of the Central Indian Hills.

Here reference has been made to the hunting of rhinoceros by Akbar near Chunar and doubt has been thrown on the great antiquity of the paintings near Mirzapur.

144 **Cousens, H.** PRASIW for the months May 1894 to August 1895, p 11, 1895

(1) For the year ending August, 1895.

Mention is made of the occurrence of stone circles with dolmens in some cases near the village of Singapur between Karimnagar and Hanamkonda (Nizam's Dominions).

145 ———— RASI, (NIS), XIX, pp 1–105, 1897

(2) Central Provinces and Berar. List of antiquarian remains.

There is a slight reference to the stone circles found at a few places in the Nagpur district.

146 ———— RASI, (NIS), XVI, pp 1–398, 1897

(3) Revised lists of antiquarian remains in the Bombay Presidency.

Here is to be found a reference to the dolmen at Konnur (Belgaum), Mottbennur (Dharwar), and Aihole (Bijapur).

147 ———— PRASIW for the year ending 31st March, 1908, pp 32–33, 1908

(4) Konnur dolmens.

Pieces of broken pottery, an earthenware saucer, etc., are reported from a dolmen.

148 ———— PRASIW for the year ending 31st March, 1909, pp 34–35, 1909

(5) Aihole.

The dolmens are not sepulchral but are more like huts where the stone-cutters used to live.

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149 Cunningham, A. RASI, I, pp 68–74, and pp 76–85, 1871

(1) Lauriya Navandgarh. Kasia.

Here reference is made to the remains of three rows of earthen barrows at Lauriya Navandgarh (pp 69-70) near Bettia and to the low earthen mounds, like barrows, of Kasia (p 76).

150 ——— RASI, III, pp 13–46, 1873

(2) Mathura.

Reference is made to the discovery of a copper celt in a mound in Mathura (pp 16–17).

151 ——— RASI, III, pp 46–52, 1873

(3) Bitha.

Reference is made to the objects found in the excavations of the fort at Bitha (near Allahabad) which include spikes of bones, a stone umbrella and stone stools. The articles are supposed to be of great antiquity.

152 ——— RASI, V, pp 105–108, 1875

(4) Harappa.

Reference is made to the excavations at Harappa, the finds of which place included a number of stone implements and numerous specimens of ancient pottery.

153 ——— RASI, IX, pp 1–165, 1879

(5) Report of a tour in the Central Provinces in 1873–74 and 74–75.

Attention is drawn to a few dolmens at Keljhar about halfway between Chanda and Markanda and a few other places (pp 140–141). They are now used as temples.

154 Dall, Rev. C. H. PASB, pp 136–153, 1867

Stone implements found in India.

See W. T. Blanford, No. 3.

155 Dalton, E. T. JASB, XLII, pt I, pp 112–119, 1873

Rude stone implements in Chutia Nagpur and other places, (with a note by T. F. Peppi).

The description of a few burial grounds, monumental monoliths, etc.

156 Das-Gupta, H. C. JASB, NS, IX, pp 291–293, 1913

(1) On two shouldered stone implements from Assam.

Two implements of the shouldered type are described and it is pointed out that the implements throw an additional light on the relationship, held hitherto only on linguistic grounds, between the Khasias of Assam and some of the older tribes of Burma.

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157 ——— IA, XLVII, pp 135–136, 1918

(2) On a peculiar polished hammerstone from Singhbhum, Chota Nagpur, India.

A peculiar hammerstone, possibly used to break cupriferous rocks, is noted and compared with a specimen obtained from Banda.

158 ——— JASB, NS, XVII, pp 209–212, 1921

(3) On the discovery of the Neolithic Indian script.

Reference is made to the claims put forward by a certain author regarding the discovery of the neolithic script in India and it is urged that better evidences are necessary to prove the case.

159 ——— JDSCU, V, Geology, pp 1–29, 1923

(4) Indian prehistory.

In this paper the author introduces, among other things, the topic regarding the existence of the Tertiary man in Burma, controverts the arguments of those who think that the implements were not found *in situ* and points out that the beds in which the implements were discovered are Pontian in age. The author further shows that the Godavari and the Narbada ossiferous alluvia with human implements are contemporaneous in age and belong to the Middle Pleistocene period. The Karnul cave fauna has also been dealt with, and it has been suggested that this fauna represents the topmost stage of the Pleistocene, if not younger while the Kashmir caves at Imselwara are supposed to be sub-recent rather than Pleistocene.

160 **Dean**, E. JASB, IV, pp 261–278, 1835

(1) On the strata of the Jumna alluvium, as exemplified in the rocks and shoals lately removed from the bed of the river: and of the sites of the fossil bones discovered therein.

A general account is published. The mammalian fossils noted include a few remains of elephant.

161 ——— JASB, IV, pp 495–500, 1835

(2) On the fossil bones of the Jumna river.

The note contains the description of bones including a few belonging to a man.

162 ——— JASB, V, pp 588–598, 1836

(3) Exhibition of fossil bones from the Jumna.

The specimens exhibited belong to the buffalo, camel, and antelope.

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163 Dikshit, K. N. ARASI for 1924–1925, pp 63–73, 1927

Exploration and Research. Western Circle, Sind, Mahenjo-daro.

A short summary of the third season's work at Mahenjo-daro is recorded. The people of Mahenjo-daro were in the chalcolithic stage of development. The finds include flint and chert implements, articles of copper including jars, implements, utensils and ornaments, terra-cotta human figurines, and objects made of sea-shells.

164 de Röepstorff, F. A. Geogr. Mag. III, pp 182–184, 1876

The Andaman islands.

Attention is drawn to the accumulations of shells, bones of animals, and pieces of pottery which are compared with similar remains found in Denmark, Scotland, etc.

165 Duroiselle, C. ARASBu for the year ending 31st March, 1913, pp 13–17, 1913

(1) Full account of works of restoration and preservation of important buildings and sites of excavations and fresh discoveries.

Discovery of a copper urn at Hmawza is noted. The urn contained charred bones and some ornaments.

166 ——— ARASBu for the year ending 31st March, 1925, pp 12–23, 1925

(2) Full account of work of restoration and preservation of important buildings and sites of excavation and fresh discoveries.

Attention is drawn to the discoveries of funeral urns together with small iron nails and blades of daggers found associated with the charred bones and ashes occurring in the urns.

167 Eliot, Sir W. RBAST, pp 134–135, 1868

On the sepulchral remains of Southern India.

The author has described the different kinds of ancient monuments found generally over S. India known locally as *Pandu-Kulis*, *Kodi-Kals*, and *Topi-Kals*. The difference between these monuments and the structures built on the Nilgiri Hills for the same purpose are pointed out. A description of some Nilgiri monuments is given. The Nilgiri monuments are supposed to be connected with a race of people called *Curumbars*.

168 Evans, J. Proc. Soc. of Antiquaries, II Sq. Vol. III, 1853

(1) Some discoveries of worked flints near Jubbalpur in Central India.

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169 ———— GM, III, pp 433–435, 1866

(2) On some flint cores from the Indus, Upper Scinde.

The paper contains a description of flint cores supposed to be of the neolithic age.

170 ———— QJGS, XXXI, p lxxvi, 1875

(3) Anniversary address of the President.

Attention is drawn to the fact that in India, as in Europe, there is an evidence to show that man co-existed with the animals which have become extinct long since.

171 ———— 1881

(4) Ancient bronze implements of Great Britain.

In this book a reference has been made to the find of copper age antiquities at Gungeria. The find has been described as the most important as yet recorded in the Old World.

172 ———— pp I–XVIII, pp 1–747, 1897

(5) Ancient stone implements, weapons, and ornaments of Great Britain. (Second edition.)

In this book a few occasional references are to be found to the implements discovered in different parts of India.

173 **Falconer**, H. (the late). QJGS, XXI, pp 372–389, 1865

On the asserted occurrence of human bones in the ancient fluviatile deposits of the Nile and Ganges: with comparative remarks on the alluvial formation of the two valleys.

The author gives his reason for thinking that possibly the valley of the Ganges was one of the earliest habitation of man.

174 **Falconer**, H. and **Cautley**, Sir P. T. PZSL, pp 84–88, 1844

On the gigantic fossil tortoise of India.

In this paper the authors concluded 'that there are fair grounds for entertaining the belief as probable that the *Colossochelys Atlas* may have lived down to an early period of the human epoch and become extinct since'.

175 **Falconer**, H. and **Walker**, H. 1859

Descriptive catalogue of the fossil remains of Vertebrata from the Sewalik hills, the Nerbudda, Perim Islands, etc., in the Museum of the Asiatic Society of Bengal.

The catalogue contains a list of 70 specimens of different types from the Nerbudda alluvium, though, according to the authors, 'some specimens have been conjecturally introduced into the Nerbudda Catalogue'.

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176 Fawcett, F. AQR, NS, III, pp 147–157, 1892

(1) Prehistoric rock pictures near Bellary, South India.

The prehistoric antiquities of the Kapgal hill, Bellary, are described and, besides two perforated stone hammers, a bone implement, and a peculiar narrow chisel, many pictures were discovered engraved on the rocks of the hill. The author gives reasons for thinking that the pictures were prehistoric while attention is drawn to the similarity between these pictures and those found on the Soba Rigaleh in Egypt 'not ..... suggesting any racial contention between the people who made both, but both expressing primitive man's manner of portraying living object; a manner, a style which is the same in all traces of his handiwork, wherever found, throughout the world'.

177 ——— JRAI, XXV, pp 371–373, 1896

(2) Rock-cut sepulchral chambers in Malabar.

Rock-cut sepulchral chambers from the neighbourhood of Calicut are described. The contents include pottery and iron implements.

178 ——— JRAI, XXV, pp 373–374, 1896

(3) South Indian stone circles.

The stone circles are sepulchral and contain fragments of bone, pieces of pottery, and iron implements.

179 ——— IA, XXX, pp 409–421, 1901

(4) Notes on the rock carvings in the Ekdal cave, Wynad. (Assisted by R. C. Temple.)

The so-called cave is really an artificial fissure made in a rock-mass. The carvings are mural and show human figures, figures of animals, etc. Specimens of worked quartz in small stone-cists have also been met with while numerous stone-cists, presumably containing human remains, occur in the neighbourhood. The carvings might be 'the handiwork of Kurumbars of a by-gone day'.

180 Fergusson, F. 1872

Rude stone monuments in all countries; their age and uses.

In this book one chapter (chapter XIII) is devoted to a general description of the dolmens, menhirs, cairns, etc., found in different parts of India.

181 Fermor, L. L. JASB, N. S. VI, pp 381–383, 1910

Note on a palæolithic implement made of manganese-ore.

The author describes an ovate implement of manganese-ore consisting of an intimate mixture of braunite and psilomelane. This is considered to be the first implement of manganese ever described.

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182 **Foote**, R. B. MJLS, 3rd Ser. pt 2, pp 1–35, 1866

(1) On the occurrence of stone implements in lateritic formations in various parts of the Madras Presidency and North Arcot districts.

Implements found in lateritic formations are described and sections are given showing the position of these implements in a few cases. Besides these implements found *in situ*, a few were found from sandy quartzite gravels and shingle beds. Three chief types of these implements have been distinguished. The different ways in which these implements might have been utilised are described. The specimens found *in situ* were obtained at a depth from 3 to 8 or 10 feet below the surface.

183 ——— QJGS, XXIV, pp 484–495, 1868

(2) On the distribution of stone implements in Southern India.

A summarised account dealing with the distribution of the implements is to be found here together with some important deductions, one of them being that 'the chipped-stone implements are found in, or associated with, two sets of formations occurring at different levels above the sea'.

184 ——— RGSI, III, pp 11–17, 1870

(3) Notes on the Geology of the neighbourhood of Madras.

The occurrence of chipped quartzitic implements in laterite and the Conjeevaram gravels is recorded.

185 ——— GM, X, p 187, 1873

(4) Discovery of prehistoric remains in India.

This is a short note recording the discovery of a few prehistoric antiquities by the author and Mr. Fraser. The remains found in the neighbourhood of Bellary, include celts, rubbing-stone pounder and kitchen-middens.

186 ——— MGSI, X, pp 1–132, 1873

(5) On the Geology of parts of the Madras and North Arcot districts lying north of the Palar river, and included in sheet 78 of the Indian Atlas.

A small part of this paper (pp. 43–58) is devoted to the description of the stone implements found *in situ* in the laterite. The implement-bearing localities and a few sections showing the position of the implementiferous beds have been described. The author thinks that 'the implements are of the same age as the laterite in which they are found and it has been suggested that during the latter part of the laterite-period the Peninsula of India was depressed some 500–600 feet below its present level'. Arguments have also been brought forward to show 'that the implement folks had carried on their works on that very spot or at only a slight distance from it'.

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187 ——— MGSI, XII, pp 1–268, 1876

(6) The geological features of the South Maharatta country and adjacent districts.

Two beds of kankar-cemented shingle with chipped quartzitic implements have been recorded. One of them is at Kaira (on the left bank of the Malprabha) and the other near the junction of the Malprabha and its tributary Benni-halle. At another locality, about twenty miles from Kaira, large chipped implements were also met with and, according to the author, 'this part of the country seems to have been a centre for the implement-makers, for implements of all sorts—axes, spear-heads, scrapers of great variety—occur scattered in large numbers over the country where the red lateritic soil is exposed'. The implements 'show very little or no sign of attrition'. Stone implements *in situ* have also been found in the gravels at Tolanmatti (near Kalogi). Implements of limestone have also been recorded from this country.

188 ——— RGSI, XII, pp 141–158, 1879

(7) On the geological features of the northern part of Madura district, the Pudukotai State, and the southern parts of the Trichinopoly districts included within the limit of sheet 80 of the Indian Atlas.

A number of specimens 'almost deserving to be called implements' was found in the laterite beds of the area.

189 ——— MGSI, XVI, pp 1–107, 1879

(8) On the geological structure of the eastern coast from latitude 15° northward to Masulipatam.

Reference is made to the different areas in the region where palæolithic implements are met with (pp. 87–89). Gritty alluvial sandy cliffs with human bones are also described (p. 96).

190 ——— RGSI, XII, pp 187–208, 1879

(9) Sketch of the geology of North Arcot district.

Reference has been made to the occurrence of palæolithic implements of quartzite found in the laterites of the area.

191 ——— GM, Dec. II, VII, pp 542–546, 1880

(10) Notes on the occurrence of stone implements in the coast laterite, south of Madras, and in high-level gravels and other formations in the South Maharatta country.

A number of occurrences in the different parts of the area is recorded.

192 ——— MGSI, XX, pp 1–103, 1883

(11) On the geology of Madura and Tinnevelly districts.

Mention is made of the occurrence of flakes of chert associated with shingle to the north of the town of Madura (p. 50).

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193 ———— RGSI, XVII, pp 200–208, 1884

(12) Mr. H. B. Foote's work at the Billa Surgam caves.

Finds in the different caves are recorded and they include bones cut with some sharp instruments, implements of bone, a small drill (?) of rock crystal, bitten and broken bones, human bones and teeth, and remains of a large number of animals, etc. It has been suggested that 'the caves were not continuously inhabited either by man or predatory animals'. The caves are supposed to be of prehistoric or post-pleistocene age.

194 ———— RGSI, XVII, pp 27–34, 1884

(13) Rough notes on Billa Surgam and other caves in the Kurnool district.

A number of caves is described. They are of a great antiquity as judged by the evidence of denudation. Remains of animals, types of antique pottery, etc. were met with.

195 ———— RGSI, XVIII, pp 227–235, 1885

(14) Notes on the results of Mr. H. B. Foote's further excavation in the Billa Surgam caves.

Besides a large collection of prehistoric fauna and bone implements of various kinds, a large number of non-descriptive bones was also found. The bones were probably cut with stone implements though no stone implements have been found. There was no sign of a cooking place or any other evidences by means of which the continued residence of a man in the cave might be established.

196 ———— JAI, XVI, pp 70–75, 1887

(15) Notes on prehistoric finds in India.

The paper contains the description of a few finds near Tuticorin and also in Kurnool, Hyderabad and Bellary. Besides pottery and different types of polished and chipped stone implements, cores of implements of the Jubbulpur type are also mentioned. Reasons are given for looking upon many of the localities in Bellary as old settlements of the celt-maker.

197 ———— JASB, LVI, pt 2, pp 259–282, 1887

(16) Notes on some recent neolithic and palæolithic finds in South India.

This is a very comprehensive paper dealing with all types of prehistoric remains found in South India. 'Most geologists regard it as a well-established fact that our ancestors..... passed through at least three, and in some countries four, grades of progressive civilisation..... In South India, up to the present day, three of these grades or periods are known to have been passed through by the old inhabitants; the Rude Stone period, the Polished Stone period, and the Iron period. A Bronze or Copper period has not, so far, been traced in the South, and iron had been introduced among the people living in the Southern Deccan, and was probably manufactured by them at the same time that they were still using and making polished stone'. According to the author, 'nothing can be clearer than

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the existence of a great break in time between the Pakæolithic and the Neolithic periods in South India'.

198 ———— PASB, pp 194–199, 1888

(17) Remarks on Mr. Ball's note.

Refutation of some personal charges brought in by Mr. Ball.

199 ———— RBAST. p 664, 1894

(18) On prehistoric man in the old alluvium of the Sabarmati river in Gujrat, Western India.

Two finds of palæolithic implements *in situ* occupying definite horizons in the old alluvium of the Sabarmati are noted. The alluvium is overlain by loess and loam and on these loess and loam deposits 'Neolithic remains in the form of flint flakes and cores of the Jabbalpur type were found together with fragments of archaic pottery'.

200 ———— MGSI, XXV, pp 1–218, 1895

(19) The Geology of the Bellary district, Madras Presidency.

The author refers to the evidences of three cultural stages in the district of Bellary—(I) Palæolithic, (II) Neolithic, and (III) Early Iron. The evidence for a copper or a bronze cultural stage is in the negative. Attention is drawn to the evidence found in the alluvium of the Sabarmati river showing a break in time between the palæolithic and the neolithic stages, whilst it is pointed out that in Bellary there was an overlap between the neolithic and the early iron age cultures. The prehistoric pottery met with is of a very high class of manufacture. A few implements, some of which are of hæmatitic jasper, are described and doubts are expressed regarding the existence of a palæolithic settlement at Kapgal (Peacock-Hill). A list is given of the varieties of stones used by the prehistoric people.

201 ———— pp 1–194, 1898

(20) The Geology of Baroda State.

While dealing with the alluvial and sub-aerial formations of the State (pp. 84–104), the author has referred to a few mammalian remains found in a sandy bed at the top of the Orsang river alluvium in the neighbourhood of Bhadarper Railway station and a few palæolithic quartzite implements found at Sadolia and Pedhmali on the right bank of the Sabarmati river. The loess formation of the State contains human artifacts at several places, the artifacts being chiefly of the nature of pigmy flints and wheel-made pottery while human bones have been found imbedded in a loess hill at a distance of 15 miles E. by S. of Ahamedabad and lying just outside the Baroda territory.

202 ———— pp 1–131, 1901

(21) Catalogue of the prehistoric antiquities in the collection of the Government Museum, Madras.

This contains a description of prehistoric antiquities stored in the Government Museum, Madras. It is pointed out that in

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Southern India there is a gap between the formations containing the palæoliths and those in which the implements of the neolithic type are found. The iron age succeeds the neolithic age and it has been suggested that no gap exists between the neolithic and the iron age, but that at many places there are evidences of the overlapping of these two stages of civilisation. The necessity of a genuine prehistoric survey is pointed out. Attention is drawn to the tall jars which are provided with 'domed lids' bearing figures of men or animals and very rarely of inanimate objects. It is pointed out that the prehistoric pottery is not glazed and that there is a 'great probability to the assumption that the art of iron-smelting and working became known in India fully three thousand years, if not more'. Articles of bronze, brass, copper, etc. have also been met with; 'but apparently none as yet under circumstances showing distinctly that they preceded the iron age'.

203 ———— pp i–vii, and 1–262, 1914

(22) The Foote Collection of Indian prehistoric and protohistoric antiquities. Catalogue raisonné.

A Catalogue of objects of prehistoric and protohistoric importance found chiefly in the Madras Presidency and other parts of India as also in Ceylon. The specimens number about 4,500 and are all geographically arranged.

204 ———— pp i–xv, 1–246, 1916

(23) The Foote Collection of Indian prehistoric and protohistoric antiquities. Notes on their ages and distribution.

According to the author, the prehistoric stages which are recognised in India are four in number, viz., (i) the palæolithic age, (ii) the neolithic age, (iii) the early iron age, and (iv) the later iron age which passed down to the protohistoric stage. The man of the later iron age was acquainted well with gold, copper, tin, lead, and silver. Besides containing a general description of the articles catalogued in Foote No. 17 arranged geographically, the treatise contains general notes dealing with (i) the weapons and the tools of the palæolithic people, (ii) the supposed neolithic people, (iii) the *hiatus* between the palæolithic and the neolithic ages, (iv) weapons and the tools of the neolithic people, (v) the iron age people, (vi) casellated hills in the Deccan, (vii) prehistoric pottery, and (viii) distribution of the prehistoric peoples.

205 **Fox, A. L.** JAI, II, pp 348–350, 1873

Exhibition of stone celts.

Some celts obtained from the Shevaroy hill people are described. The local people designate the implements as—*Wigginespoona* (that which takes our ills upon itself). Mention is made also of the occurrence of a large iron adze and handle of great antiquity.

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206 **Frere**, Sir H. B. E. JRABom, V, pp 349–362, 1854

Descriptive notices of antiquities in Sind.

A description of cairns, cromlechs and other objects met with in Sind is given. These are generally known as the Kaffirs' graves. The cairns are locally known as *chors*. A few cases which must have been human habitations once are also mentioned.

207 **Fryer**, G. E. (Captain). PASB, pp 46–47, 1872

A Collection of celts from Burma.

The implements were of various types and collected from different localities. The adzes with shoulders had their analogues in iron in Burma.

208 **Garstin**, J. H. IA, V, pp 159–160, 1876

Dolmens in the Coromandel Coast.

A few dolmens are described. The eastern stones of the dolmens were always found with an opening. Human bones and also scraps of iron were also met with. A conch or vessel approaching a bidet was also found among the finds. Local traditions describe them to be the dwelling places of a pigmy race.

209 **Garwood**, J. F. JASB, LVI, pt i, pp 161–163, 1887

Notes on the ancient mounds in the Quetta district.

Attention is drawn to the large number of mounds in the district. The finds in the mounds include mammalian bones, fragments of archaic pottery, ash-beds and charcoal. A ring-stone, a jasper corn-crusher, bronze and copper (?) articles are also recorded.

210 **Godwin-Austen**, H. H. JAI, I, pp 122–143, 1871

(1) On the stone monuments of the Khasi hill tribes and on some of the peculiar rites and customs of the people.

Different types of monuments and the purposes for which they are recorded are described. The tall upright stones are called '*Mao byana*' (a monument) or '*Mao shinram*' (the male stone) while the flat horizontal slabs are called '*Mao kynthai*' (the female stone).

211 ——— RBAST, p 153, 1874

(2) Notes on the rude stone monuments of the Khasi hill tribes.

A few cairns and monoliths form the Khasi hills are noted while cairns of the Khasi hill type are also reported from the neighbourhood of North Manipur.

212 ——— PASB, p 158, 1875

(3) A celt found in the Khasi hills at Shillong.

A celt of hard slate is recorded. Possibly it was used as a hoe.

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213 ——— JAI, IV, pp 144–147 1875

(4) On the rude stone monuments of certain Naga tribes, with some remarks on their customs, etc.

Erect upright cenotaphs are described, propitiation of the ancestral manes being the main object of these monuments.

214 ——— JAI, V, pp 37–41, 1876

(5) Further notes on the rude stone monuments of the Khasi hill tribes.

Some stone monuments and cinerary urns are described.

215 **Gordon,** Rev. E. M. JASB, NS, I, pp 181–201, 1905

Notes concerning the people of Mungeli Tashil, Bilaspur district.

Reference is made to the type of neolithic implements found in the area. The implements are locally known as '*sarag patthar*', i.e., stones from the heavens. The implements are often bored, in some cases the boring operation was probably carried on by the rotatory action of a stag's horn. The hole was possibly produced by percussion carried on with the tools having sharp points.

216 **Ghurye,** G. S. MI, VI, pp 26–57, 100–139 (l), 1926

Funerary monuments of India.

A classified account of the funerary monuments, chiefly the megalithic monuments, and practices in India has been attempted. These monuments have been classified as (1) rock-cut tombs, (2) pure dolmens, (3) underground cists, (4) degraded dolmens, (5) three-sided dolmens, (6) cairns or tumuli, (7) stone circles, (8) trilithons, (9) menhirs and alignments, and (10) pottery tombs. Each of these different types has been described. According to the author, 'essentially the Indian dolmens are different from the Caucasian ones and intimately linked up with the Egyptian funerary monuments'. The question about the age of the dolmens has also been discussed and their date has been provisionally fixed at 1000 B.C. at the latest.

217 **Guha,** B. S. PISC, (14th), p 307, 1927

A comparative study of the human crania excavated at Adittanallur.

A short summary of the paper only published.

218 **H.** (addon) A. C. Nat, LXXVI, p 82, 1907

The discovery of stone implements of Palæolithic type in Veddah caves.

The writer refers to the discovery of F. and P. Sarasin who, as a result of their investigations into a few caves with palæolithic remains, suggested the entire absence of the neolithic age in Ceylon. From the peculiarity of the materials used for the manufacture of the implements, the investigators are of

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opinion that the stone-industry of Ceylon may be designated as a special *facies* of the Palæolithic age—viz., Veddaica.

219. **Hardinge, H. O. D.** MJLS for the sessions 1889–94, pp 13–20, 1894

Notes on some old graves in the Coimbatore district.

Details of a few dolmens excavated by the author are given. The chief contents are articles of pottery and small osseous fragments. According to the local traditions these dolmens, known locally as the *Pandava* or *Mandavas Kuries*, were inhabited by a dwarf race. These structures all lie due east-west and the entrance is always from the eastern side. According to the author, these Kuries are all graves and were worked when Sun worship was in vogue.

220 **Hargreaves, H.** ARASI for 1924–1925, pp 51–60, 1927

Exploration and Research. Frontier Circle.

A number of mounds is described. 'One worked flint with pecked edges' was found in the ruins of one of the mounds (Luni mound). Potsherds are found rather abundantly in the ruins of all the mounds among which the Sampur mound is the most important. The antiquities found in this mound are chiefly potsherds, large earthen vessels, and terra-cotta spindle whorls. It has been concluded that 'the site (of this mound) must have been occupied for some considerable time before and after the Christian Era and have been abandoned long before the Muhammadan invasion and never afterwards re-occupied'.

221 **Hartley, C.** SZ, VII, pp 197–200, 1911

(1) An exploration of the Baligal-ge, near Balangoda (Ceylon).

The diggings from the Baligal-ge or Snail Cave were found to include stone implements of a very rude type far inferior to good palæoliths, bone needles, etc., while near the surface fragments of pottery 'quantities of charred woods and bones mingled with archaic chips of quartz and chert, buttons and a short-length of cheap brass chain' were also met with. The author has been led to conclude 'that the cave-dwellers represent the old and rudest type, while their descendants armed with improved weapons and disdaining the wretched fare of their ancestors, forsook the caves and led ampler and fewer life on the hills, following the game in their seasonal migrations'.

222 ——— SZ, IX, pp 117–123, 1913

(2) The stone implements of Ceylon.

According to the author the Ceylon implements are mainly neolithic, but the possibility of the existence of palæolithic type is not precluded. The occurrence of pigmy implements is noted. The author suggests that the pigmy utensils were possibly manufactured by the same race of people as produced the ordinary types of neolithic implements and 'that the smaller and finer pigmies were used in numberless ways to supply deficiencies of the coarser and ruder neolithic tools'.

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223 ———— SZ, X, pp 54–67, 1914

(3) On the occurrence of Pigmy implements in Ceylon.

According to the author the pigmy flints, etc., as found in different parts of the world, are of four main types. A number of pigmy implements found in Ceylon is described and figured together with a short account of the localities from which the specimens were obtained. Eighteen types of these implements are distinguished, namely, crescentic or lunate, semi-lunate, irregular-rhomboidal, angular D-shaped, beaked, curved points, straight points, drill points, borers, arrow-heads, blades, chisels, hollow-scrapers, round scrapers, quartz pebbles and gneiss pebbles. The author is of opinion that possibly the pigmy implements and the neoliths are separated in time. A list is given of the different localities in Ceylon where the pigmy implements have been met with.

224 **Haswell, J.** TEGS, I, pp 198–200, 1870

Remarks on two flints from Jubbalpur, Central India, exhibited at a meeting of the Society on the 19th December, 1867, and on the flint implements discovered there by the late Lieut. Downing Swiney, R.E.

The locality, character, and age of the implements were discussed. As regards the locality it has been mentioned that the bed of the Narbada was one of the find-spots of these implements. It is pointed out that the implements are not of flint but are chiefly of agate, carnelian, chalcedony, and jasper. Five different types of implements were recognised. No definite conclusion could be arrived at regarding the age of the implements and on account of the fact that most of the flints are nuclei, chips, and waste and that there are very few of a finished character it would rather appear that Lieut. Swiney had come upon the site of a former factory.

225 **Haughton, J. C.** PASB, XXXII, pp 306–307, 1863

Flint implements from the Andamans.

A number of arrow-tips is noted.

226 **Hayden,** Sir H. H. RGSI, XXXVI, pp 23–39, 1907

(1) The stratigraphical position of the *Gangamopteris* beds of Kashmir.

A passing reference is made to the Imselwara cave, the fossils of which are described as being of Pleistocene age.

227 ———— RGSI, XLVII, pp 1–41, 1916

(2) General report of the Geological Survey of India for the year 1915.

In this paper reference has been made (page 36) to the find of neolithic and palæolithic implements in the newer and older alluvia respectively of the Kanhan valley (Chindwara) by Dr. Fermor.

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228 ———— PASB, NS, XV, pp xiv–xxi, 1919

(3) Annual Presidential Address.

In course of a general address dealing with the question of the Geological time with special reference to the antiquity of man, the author made an incidental reference to *Sivapitheous Indicus* found in the Siwaliks of India.

229 **Heine-Geldern,** R. SAG for 1926–27, pp (47)—(54), 1927

Die Steinzeit Südostasiens.

In this work the author expresses the opinion that the palæoliths found in Upper Burma are comparable to the young palæoliths of Europe, specially of the Magdalenian type. Similarity between these finds of Burma and of Ceylon, Central Sumatra and South-West Celebes is pointed out. The distribution of the shouldered implements and its significance regarding the separation between the people speaking the austronesic and the austro-asiatic language are discussed.

230 **Henwood,** W. J. ENPJ, NS, IV, pp 204–206, 1856

Notice of the rock-basons at Deo (Devi) Dhoora near Almorah in Upper India.

The author has described groups of rock-basons and cairns occurring in the locality (mentioned in the title of the paper) which is situated at a distance of about eighteen miles south-west of Almorah.

231 **Hocart,** A. M. CJS, Section G. I, pt 2, pp 56–57, 1925

Archæological summary. Prehistories.

Palæolithic chert and quartzite implements are described from a place called Uppodaippulam.

232 **Hoernle,** Rev. A. F. R. PASB, pp 143–145, 1884

Remarks on a paper of J. Cockburn (see No. 4).

It was pointed out that there was not sufficient evidence available to decide anything regarding the age of the drawings.

233 **Holland,** Sir T. H. PASB, p 132, 1903

(1) Exhibition of some crushing mills used by ancient gold miners in Chota Nagpur.

Reference is made to the various types of stone-implements including grooved stones found in the jungle of Singhbhum, 'where apparently they were used by a past and unknown generation of gold miners'.

234 ———— RGSI, XXXI, p 45, 1904

(2) Ancient kitchen-midden in the Andamans.

A short note on ancient kitchen-midden on the site of the Cadellganj barracks is recorded.

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235 ———— RGSI, XXXI, p 103, 1904

(3) Fossil bones in the Godavari alluvium.

A short account of a few fossils found is recorded and the opinion is expressed that the alluvium is of pleistocene age.

236 ———— RGSI, XXXI, pp 107–108, 1904

(4) Ancient kitchen-midden in the Andamans.

The origin of the kitchen-midden at Cadellganj is discussed and attributed to the Jorawas found in the central parts of the Southern Islands.

237 **Hooker,** Sir J. D. 1854

Himalayan Journals. 2 vols.

In Vol. II of this book reference has been made to the stone-henge-like sepulchral and other monuments found among the Khasias.

238 **Hosten,** Rev. Father H. An, Bd II, pp 735–740, 1907

Prehistoric remains near Kodai-Kanal, Palnis.

A few peculiarities of the Palni dolmens are noticed. These are (i) enclosure by square or rectangular walls, and (ii) the presence of a sort of boxes between the walls and the dolmens, etc. The finds in the opened dolmens or kistvaens are described, while mention is also made of the discovery of a pyriform urn which lay buried in the ground. Attention is also drawn to a form of remains consisting of low circles of earth and stone without dolmens or kistvaens.

239 **Hughes,** T. W. H. MGSI, VI, p 91, 1867

The Bokaro coal-field.

Here is a reference to the find of some stone implements in a jungle in the neighbourhood of the Kujree mullah in the coal-field.

240 **Hughes-Buller,** R. IA, XXXII, pp 342–343, 1903

Cave burial in Baluchistan.

A vaulted cave with a number of human skulls is described. The cave occurs in the Jhalwar country. The report of another cave in the neighbourhood is also noted.

241 **Hunt,** E. H. JHAS, pp 180–224, 1916

(1) Hyderabad cairns. (Their problems.)

A general account of the cairns is given. The author records that so far as available information goes, the cairns are all distributed along routes quite well-known. The cists have a peculiar, possibly some symbolical shape and the finds include pots of two main types, viz., (i) rounded red pots with lids, and (ii) black dishes without lids. Marks of two classes have also been noted on the pots:—(i) relatively deep and clear, and (ii) rather indifferent but occurring very often. Human bones possibly of a dolico-cephalic type are also met with as also

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iron and copper articles. According to the author the cists were all possibly orientated in some particular way just to place the body facing towards some particular direction. Locally the cairns are known as the 'Rakshashas' tombs. The cairns-builder was a man in a fairly well-advanced cultural stage.

242 ——— JRAI, LIV, pp 140–156, 1924

(2) Hyderabad cairn burials and their significance.

A number of cairns or cist-graves is described pointing out the methods used in opening them, the position of the bones and of the bodies in them, and the different kinds of articles found therein including pottery with marks of various types. Attention has been drawn to the resemblance between these early Indian burials and those of Egypt.

243 **Hutton**, J. H. pp vii–xv, 1–480, 1921

(1) The Angami Nagas.

A part of appendix VII (pp. 403–405) of this book is devoted to the description of the stone-celts which, according to the Angamis, are but thunderbolts. The celts are of two types.

244 ——— pp i–xvii, 1–463, 1921

(2) The Sema Nagas.

In this book is to be found a short note of the celts found in the Sema Naga country (pp. 196, 252, 256–258). The celts are supposed to be thunderbolts and 'are highly reminiscent of the Naga iron implements'. Two types of the celts have been distinguished.

245 ——— M, Vol. XXIV, pp 20–22, 1924

(3) Two celts from the Naga Hills.

The description contains the notice of two celts, one of which is of the shouldered type.

246 ——— JASB, N. S. XXII, p 133, 1926

(4) A Naga Hills Celt.

The celt is slightly shouldered and has been fashioned out of silicified wood.

247 ——— JRAI, LVI, pp 71–82, 1926

(5) The use of stone in the Naga Hills.

Reference is made to the different types of stone implements found in the area. Various urns of stone are discussed and the author is of opinion (i) that the forms in which stone is used are generally associated with similar forms in wood, ... (ii) that the use of stone is closely associated with a fertility cult in which the souls of the dead are utilized to fertilize the soil and promote good crops of men, stock, and cereals, stone menhirs and dolmens of phallic significance being used as vehicles for the purpose.

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248 **I.** (Anonymous). IA, X, p 154, 1881

Cinerary urns, ancient or modern.

Doubt is thrown on the high antiquity of the few cinerary urns found at the foot of the Bairat rock.

249 **Iyengar**, P. S. PISC, (11th), p 63, 1924

(1) A palæolithic settlement and factory in the Mysore State.

The implements were found at a place in Tiptur taluq and include neolithic as palæolithic types. The locality is ideal for the settlement and the establishment of a factory.

250 ——— PISC, (12th), p 262, 1925

(2) Some hand grasp designs in the Palæoliths found in Mysore.

Here is to be found the record of numerous hand grasp designs in the palæoliths obtained in Tiptur taluq as mentioned in the previous article.

251 **Jones**, T. R. NSc, V, pp 345–349, 1894

Miocene man in India.

The note contains a short review of the important recorded occurrences of prehistoric implements found in parts of India with a special reference to Dr. Noetling's find regarding the evidence of a late Miocene or Upper Pliocene man in India.

252 **Kearns**, J. T. MJLS, XXI, pp 27–30, 1859

The cairns of Tinnevelly.

A number of cairns is described. Each of them has an urn bearing some marks and containing pulverized bones. Iron weapons and small earthen vessels were also met with. Attention is drawn to the resemblance that exists between these cairns and those of the aborigines of Ireland. The antiquity and the use of these cairns is discussed.

253 **Keith**, Sir A. JASBom, XI, pp 663–672, 1919

Report on two human crania of considerable but uncertain antiquity.

The Bayana and the Sealkot crania are described and found to belong to a type abundantly represented in the districts in which they were discovered.

254 **King**, W. MJLS, 3rd Ser., pt 2, pp 36–42, 1866

(1) Note on the occurrence of stone implements in North Arcot district.

A few implement-bearing localities are described. Few factories are also identified where the implements were probably manufactured for barter.

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255 ———— PASB, pp 136–153, 1867

(2) Stone implements found in India.

See W. T. Blanford (3).

256 ———— JASB, XLVI, pt I, pp 179–185, 1877

(3) Notice of a prehistoric burial place with cruciform monoliths, near Mungapet in the Nizam's dominions.

The place containing the sepulchral remains is known as the *Rakshas-gudium* or the village of the demons who are described as being 'as tall as trees, unclothed, long-haired, and of a time beyond the Ken of man'. According to the author, the remains belong to a later pre-Aryan time or Hindu-Kolarian period.

257 ———— MGSI, XVI, pp 109–194, 1880

(4) The Gneiss and Transition rocks and other formations of the Nellore portion of the Carnatic.

The Cuddalore sandstone is overlain by a thin skin of ferruginous or lateritic conglomerates which are widely scattered. These pass gradually into heavy recent clayey gravels very common in the Carnatic and the Cuddapah basin and these are described as implement-bearing gravels from the presence of palæolithic quartzitic implements in them.

258 ———— PASB, p 143, 1884

(5) Remarks on a paper of J. Cockburn.

The author is in agreement with the opinion of Mr. Cockburn that hæmatitic drawings may last for a long time.

259 ———— PASB, pp 53–54, 1893

(6) Note on flaked and chipped stones from Kon in the Mirzapur district.

A number of flaked and chipped fragments of chert is referred to. It has been suggested that they are probably the refuse heaps of the implements manufactured in the palæolithic time.

260 **King**, Major W. R. JA, I, pp 18–51, 1870

The aboriginal tribes of the Nilgiri Hills.

In this paper a reference has been made to the Druidical circles, cromlechs with their contents, cairns, etc. belonging to the Todas (pp. 31-32) and the kistvaens or dolmens of the Khotas (p. 43).

261 **Kirtikar**, K. R. JASBom, IX, pp 524–530, 1912

Notes on two skulls (*Homo sapiens*) from Upper India.

Two skulls are described. One of them was found near Bayana, on the Bayana-Agra Railway, at a depth of 35 feet below the river-bed level; and the other at Sialkot at a depth of about 6 feet below the surface. The skulls are dolico-cephalic.

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262 Kloss, B. C. 1903

In the Andamans and Nicobars.

Reference is made to the kitchen-middens, pottery, stone implements found in the Andamans and it is concluded that the Andamanese are the aborigines of the islands and 'that the locality was settled some time during the Pleistocene periods, and certainly not later than the Neolithic age' (p. 184).

263 Ko, T. S. ARASBu for the year ending 31st March, 1908, pp 15–17, 1908

(1) Archæological finds.

It is reported that a hill in the Katha district bears the foot-print of a Tertiary man.

264 ——— ARASBu for the year ending 31st March, 1911, pp 23–27, 1911

(2) Archæological finds.

Reference is made to the discovery of stone and bronze celts in Yunan and to the similarity in belief regarding the origin of these celts in Burma, India, Norway, and England as being derived from the clouds during the thunderstorms.

265 ——— ARASBu for the year ending 31st March, 1919, pp 39–43, 1919

(3) Archæological finds.

A few stone axe-heads associated with human remains are described from Myaing township (Pakokku). The axe-heads are supposed to have been made by men possibly during the close of the Pliocene or at the beginning of the Pleistocene periods.

266 Lapicque, L. BMHN, t. XI, pp 283–285, 1905

Note sommaire sur une mission ethnologique dans le sud de l' Inde : La race noire Prédravidienne.

A short note on the finds obtained at Adichanallur including a cranium in a sufficiently good state of preservation and perfectly determinable. The Adichanallur race belongs to one which may be that of the Protodravidians or originally Dravidians.

267 LeMesuriar, H. P. PASB, XXX, pp 81–85, 1861

(1) Note on twelve stone hatchets or celts from the neighbourhood of Jubbalpur.

The paper contains a short account of a large number of celts near the Chachye falls on the river Tonse.

268 ——— PASB, pp 164–165, 1867

(2) Cairns.

Cairns in the neighbourhood of Chunar are noted.

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269 **Leslie**, F. RBAST, pp 154–155, 1871

On megalithic circles.

According to the author, the stone-circles and other megalithic monuments of India were in ancient time as well as now commonly used as places of worship.

270 **Lewis**, A. L. RBAST, p 137, 1869

Notes on the builders and the purposes of megalithic monuments.

The author refers to an almost continuous chain of the megalithic monuments extending from India through Persia and Asia-Minor, the Mediterranean coasts and France, to Britain and Scandinavia. According to the author, this resemblance cannot be an accidental one. The author also points out the several uses to which the different kinds of these monuments were put.

271 **Lewis**, F. SZ, VIII, pp 142–144, 1912

(1) Flints, etc., from a cave at Urumutta.

The cave at Urumutta (Matara district) is described along with its contents which are palæolithic arrow-heads, pottery and animal bones. A report of Mr. C. Hartley is attached to this paper.

272 ——— SZ, VIII, pp 289–291, 1913

(2) Note on cup-shaped rock found at Kudagama, in the Kende Korale, North Central Provinces.

A slab with 21 cup-marks is described. The cup-marks are of various sizes and described by the local people as Yoda-Vedas. The author thinks that they were crucibles for fashioning or tempering iron weapons.

273 ——— SZ, IX, pp 141–142, 1913

(3) Further note on the cup-marked rock at Kudagama.

A criticism of the opinion of Mr. Parker (No. 2).

274 **Limur**, Compte de. 1883

On the similarity between the celts found in the North-West Provinces of India and those found on the cromlech of Er-Lanning in the gulf of Mohiban, Brittany, France.

This is a short memorandum on the subject.

275 **Lockwood**, E. PASB, pp 102–103, 1875

Stone implements from Kharakpur.

Two perforated stones found in the bed of the river Mun at Kharakpur are described.

276 **Logan**, A. C. pp 1–85, 1906

Old chipped stones of India.

This is a small handbook on the subject.

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277 **Logan**, W. IA, VIII, pp 309–311, 1879

Find of ancient pottery in Malabar.

A group of cells in the neighbourhood of Calicut is described. The finds in them include a large number of earthenware pots and iron weapons, but no human remains. The author considers the cells to be the death house of a family accustomed to burn the dead.

278 **Long**, Rev. J. PASB, p 188, 1868

Remarks on the paper of R. A. Cole (see No. 1).

A few remarks of a general nature are recorded here.

279 **Longhurst**, A. H. ARADM for 1912–1913, pp 53–62, 1913

(1) Anantapur district.

A notice is published of the dolmens, etc., found in the Kalyandrug *taluk*. These prehistoric remains are very numerous and chiefly to be found by the Kalyandrug town itself.

280 ——— ARADM for 1912–1913, pp 40–51, 1913

(2) Bellary district.

A short notice is given of the 'ash-pass', known locally as *Budi Canive* of Kudatini and the 'Peacock Hill' prehistoric settlement of the Kappagallu Hill, while a little detailed description of the dolmens at Gällapalli is recorded. The contents of the dolmens were found to be (i) urns and earthenware vessels with bone fragments or ash and (ii) remains of iron implements.

281 ——— ARADM for 1913–1914, pp 43–45, 1914

(3) A report on the excavation of certain cairns in the Coimbatore district.

A group of cairns near Sirmungai (Coimbatore) is described. The contents of the cairns are noted. The urns have sometimes been found to be provided with legs and not with ring-stands. Human bones, implements of iron and stone, beads, etc., have been found and they show that the tombs were prepared by a very highly civilised race of people.

282 ——— ARADM for 1913–1914, pp 36–38, 1914

(4) Nilgiri district.

Reference is made to the dolmens some of which are sculptured. A general account of the sculptures is given and the sculptured dolmens are looked upon as hero-shrines. It is suggested that 'as dolmens these quaint monuments probably belong to the prehistoric period, but as hero-shrines they are probably not earlier than the 15th or 16th century'.

283 ——— ARADM for 1914–1915, pp 39–41, 1914

(5) A report on the excavation of certain cairns in the Kurnool district.

A number of cairns and stone-circles near Gajjalkunda (Kurnool) is noted. A few tombs are described. The contents

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show that they must have belonged to a highly civilized people of the iron age. Some of the fossils contained sacrophagi which stand on a number of little legs. The human bones, in some cases, at least, appear not to have been calcined but entombed after having been bleached.

284 ——— ARASI for 1911–1912, pp 159–160, 1915

(6) Rock-cut tomb near Calicut.

A tomb is described with its contents of urns and pitchers of different types.

285 ——— ARADM for 1914–1915, p 39, 1915

(7) The manufacture of stone implements in prehistoric times.

The author gives an account of a prehistoric stone factory at Dumaketiapalle (Anantapur district) and discusses the methods of fashioning the implements.

286 ——— ARASI for 1912–1913, pp 145–147, 1916

(8) The cinder mound at Kudatini in the Bellary district.

According to the author, the two mounds at Kudatini and Nimbapuram belong to the Vijyanagar period, *i.e.*, about the 15th century A.D.

287 ——— ARADM for 1916–1917, pp 36–38, 1917

(9) Antiquities in Coorg.

Ancient sepulchral remains in Coorg do not differ from similar monuments found in the Deccan and Southern India.

288 **Lubbock, J.** At. June 22, p 822, 1867

The stone age.

It is a short note about the implements of Jade in Upper Assam where the implements are supposed to have fallen from the sky and possess talismanic properties.

289 **Lydekker, R.** PI, Ser: X, I, pp 182–300, Suppl. *ibid.*, II, pt 2, pp 63–66, 1880

(1) Siwalik and Narbada Proboscidea.

This contains an account of the fossil elephant (*E. namadicus*) found in the Narbada alluvium.

290 ——— RGSI, XV, pp 28–33, 1882

(2) Note on some Siwalik and Jumna mammals.

The paper contains a list of the mammalian fossils collected by Mr. J. Cockburn in the older Pleistocene alluvium of the Jumna and its tributaries in the district of Banda.

291 ——— RGSI, XV, pp 102–107, 1882

(3) Note on some Siwalik and Narbada fossils.

The paper contains a description of the fossil hippopotamus (*H. namadicus*) found in the Narbada alluvium as also a few

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molluscs found in the Jumna and the Narbada Pleistocene deposits.

292 ——— PI, Ser. X, II, pt 3, pp 67–98, 1882

(4) Siwalik and Narbada Equidæ.

The paper contains the description of the fossil horse (*E. namadicus*) found in the Narbada alluvium.

293 ——— PI, Ser. X, II, pt 6, pp 178–363, 1884

(5) Siwalik and Narbada Carnivora.

Herein is to be found the description of the fossil bear (*U. namadicus*) discovered in the Narbada alluvium.

294 ——— PI, Ser. X, III, pt 2, pp 35–104, 1884

(6) Siwalik and Narbada Bunodont Suina.

The paper contains the description of *Hippopotamus namadicus* and *H. palœindicus*. The remains are known from the Narbada valley with certainty, but the alluvia of a few other rivers also possibly contain the remains of these animals. The mandible of a pig (*Sus giganteus*) from the Narbada beds is described and its affinities discussed.

295 ——— PI, Ser. X, III, pt 2, pp 122 et seq., 1884

(7) Synopsis of Siwalik and Narbada Mammalia.

Remains of fossils found in the Narbada beds together with a reference to the literature are to be found noted here.

296 ——— PI, Ser. X, pt 6, pp x, 155–208, 1885

(8) Siwalik and Narbada Chelonia.

The paper includes a description of *Pangshura flaviventris* and *Trionyx gangeticus* found in the Pleistocene beds of the Narbada valley.

297 ——— 1886

(9) Catalogue of the remains of Pleistocene and prehistoric Vertebrata, contained in the geological department of the Indian Museum, Calcutta.

The catalogue contains the description of vertebrate remains obtained from the valleys of the Narbada, the Jumna, the Penganga, the Kistna, and the Irawadi as also from Kathiwara and Goalpara (Assam).

298 ——— RGSI, XIX, pp 120–122, 1886

(10) Preliminary note on the Mammalia of the Karnul caves.

A list of the animal remains with a few short notes is published. It has been suggested that the bones supposed to have been cut by human agency might have been gnawed by porcupines.

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299 ———— PI, Ser. X, pt 2, pp 23–58, 1886

(11) The Fauna of the Karnul caves.

The fauna is described while a short account of the caves is also given. The fauna includes mammals, birds, reptiles, amphibia and molluscs. As regards the age of the fauna it has been concluded that 'the comparatively large number of species either totally extinct, or which are not found in India, renders it probable that the age of a considerable part of the Karnul cave deposits is not newer than the Pleistocene; and the fauna, as being certainly more recent than that of the Narbada beds, may be provisionally assigned to the latter part of that period'.

300 ———— 1885–1887

(12) Catalogue of fossil Mammalia in the British Museum. Pts. I–V.

Occasional references to some Indian Pleistocene vertebrate remains.

301 ———— RGSI, XXII, pp 56–58, 1889

(13) Notes on Siwalik and Narbada Chelonia.

A short note of the Narbada Pleistocene tortoise (*Trionyx gangeticus*).

302 **Mackenzie**, J. S. F. IA, II, pp 7–10, 1873

(1) On the rude stone archæology of Hassan district, Maisur.

The author has given a description of the barrows, dolmens, tumuli, cromlechs, circles, menhirs and carins found in the district.

303 ———— IA, II, pp 49–50, 1873

(2) The menhirs of the Hassan district.

The paper contains an account of the six different classes in which the Hassan menhirs may be divided.

304 **Maclaren**, J. M. RGSI, XXXI, pp 59–91, 1904

(1) The auriferous occurrences of Chota Nagpur, Bengal.

The paper contains a short account of the stone implements used by the ancient gold-seekers found in widely separated places in Singhbhoom and Gangpur. They are locally known as *dev-logkepathar*, i.e., the stone of the gods (pp. 67–69).

305 ———— RGSI, XXXIV, pp 96–131, 1906

(2) Notes on some auriferous tracts in Southern India.

Reference is made to the relics of mills left by the ancient workers in the gold-bearing reefs (pp. 122–123). Three types of the relics have been distinguished.

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306 Majumdar, R. C. JBORS, IX, pp 419–420, 1923

Neolithic Writings in India: A Rejoinder.

This is a short note regarding the prehistoric origin of the Brahmi alphabet.

307 Man, E. H. JAI,XII, pp 379–381, 1883

On the aboriginal inhabitants of the Andaman Islands.

In this paper a short account is given of the stone implements used by the Andamanese at the present day.

308 Mangles, H. A. PASB, p 59, 1868

Presentation of a fragment of a stone hatchet (neolithic type), found six miles north of Mercara in Coorg, on the crest of a hill.

309 Mantegazza, P. AAE, XIII, pp 489–503, 1883

Studii sull 'etnologia dell' India.

An account is given of a visit to a site of prehistoric ruins in the Nilghiries. The hill where the most antique stony monuments are situated is known as the Seven Cairns' Hill. Many fragments of agrillaceous potsherds were found. These prehistoric monuments are called the Karambar rings in Southern India. In Europe similar monuments are found in the bronze age, but in India iron objects are also found in them showing that the metal was used in India earlier than in Europe and that the interval between the stone and the iron age was very small. Cairns and monuments are rather common in the Nilghiries. The cairns are called *phim* by the Todas and *hokkallu* by the Badagas who designate the barrows as *Pongui*. Different types of cairns and the finds in them are described. It is also pointed out that there is very little difference between the construction of the cairns and the barrows. One funeral urn with bones is dealt with, while the urn usually contains clay instruments and ornaments. The analysis of the bronze articles found in the cairns show that they have an excess of tin in comparison with the European bronze and hence it has been suggested that the discovery of malleable bronze is of Indian origin. The resemblance of the Nilghiri cairns with those of Europe is surprising. The antiquity of the cairns is discussed. Stone-circles, locally known as *altari*, are described. The cromlechs are comparable with the *Kolla-Kallus* of Mysore and Coorg. The Badagas select the neighbourhood of cromlechs for building their temples. Some of the Badagas and the Kotas say that the cromlechs not worked with stone were prepared by their ancestors, but they also confess that they know nothing about the origin of the cromlechs with stones. Kistvaens and sepulchral tumuli are also dealt with.

310 Marchesetti, C. JRASBm, XII, pp 215–218, 1876

On a prehistoric monument of the Western coast of India.

The author refers to a petrified forest in the Portuguese Province of Sattary. The forest is overlain with trappite and bears incisions which must have been produced by sharp cutting instruments. The author is, thus, led to the conclusion that

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the southern Konkan was inhabited by a civilised people in the pre-trappean days.

311 **Marshall**, Sir J. H. ARASI for 1904–1905, pp 105–106, 1908

(1) A new type of pottery from Baluchistan.

A number of vases from the Jhalwan district is described and their decorative *motifs* are discussed. According to the author, 'that they date back to a period before the Christian era seems likely in view of the fact that nothing at all like them is known to have come from any of the Buddhist sites in Baluchistan or the Frontier Province'.

312 ——— ARASI for 1911–1912, pp 29–43, 1915

(2) Excavations at Bhita.

A few records of the neolithic implements are noted.

313 ——— The Cambridge History of India, Vol. I, Chapter XXVI, pp 612–618, 1922

(3) The monuments of ancient India.

A very short account of the palæolithic and neolithic implements is to be found. Attention is also drawn to the practical absence of bronze antiquities and to the relative abundance of copper-age antiquities in India. 'In Southern India there was no copper age, and iron probably did not take place of stone until about 500 B.C.', while, according to the author, there are evidences to show that iron was introduced into N.W. of India, 'during the second millenium B.C.' Attention is drawn to the mounds at Lauriya Nandangarh (Bihar) in the erection of which the Vedic rites were followed.

314 ——— ARASI for 1924–1925, pp 60–63, 1927

(4) The prehistoric civilization of the Indus.

It is pointed out that a large number of mounds has been 'revealed by an experimental aeroplane survey carried out some fifty miles of the bed of the Ravi, on which Harappa stands'. Some of the newly discovered sites appear to be contemporary with Harappa itself while others may help to bridge the wide gulf of some 2,000 years which at present separate this prehistoric from the historic age of India. The people of Mahenjo-daro were 'in the transition stage between the stone and copper ages'. Both at Harappa and at Mahenjo-daro, the dead bodies and a part of the remains were subsequently buried in cinerary urn. The author is of opinion that with the progress of excavation work it is becoming clearer that the civilisation, the remains of which have been discovered at Harappa and at Mahenjo-daro, 'was no mere provincial offshoot of Mesopotamian culture, but was developed for countless generations on the banks of the Indus itself'.

315 **Mason**, F. IA, I, pp 326–328, 1872

The celts of Toungoo.

The author describes the various types of stone and copper celts, etc., obtained from the district of Toungoo. According to the author most of the antiquities were imported from abroad.

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316 **M**: C. S. MJLS for the year 1879, pp 36–42, 1880

Antiquities of Mamandur in North Arcot district.

The dolmens are rectanguar in shape and locally known as the Pandava temples. At present the Kurumba shepherds of the neighbourhood build similar dolmens which are raised in memory of the chiefs of the clans after their death.

317 **Medlicott**, H. B. PASB, p 138, 1873

(1) A stone implement from the ossiferous 'Pliocene' deposits of the Narbada Valley.

Reference was made to the implement found *in situ* on the Narbada near Bhutra. It was held that the bed was not older than the late Pleistocene.

318 ——— RGSI, VI, 49–54, 1873

(2) Notes on a celt found by Mr. Hacket in the ossiferous deposits of the Narbada valley (Pliocene of Falconer): on the age of the deposits.

According to the author the age of the deposits is not more than the late pleistocene.

319 ——— PASB, p 159, 1875

(3) A stone hatchet from Dibrughar, Upper Assam.

Reference was made to a stone hatchet found underground in a plantation near Dibrughar.

320 **Menon**, V. K. R. FI, XXXIV, pp 374–375, 1923

Stone erections in India.

Some stone implements of the Assamese type are described. They were erected by childless devotees with the hope of getting children by propitiating the gods.

321 **Meyer**, H. von Pal, XV, pp 1–40, 1865

Ueber die fossilien Reste von Wirbelthieren, welche die Herren von Schlagintweit von ihern Reisen in Indien und Hoch-Asien mitgebracht haben.

Vertebrate fossils from different localities are described including remains of oxen found in the beds at Jhansi Ghat, between Jubbalpur and Narsinghpur, of diluvial (Pleistocene) age.

322 **Mitra**, P. IA, XLVIII, pp 57–64, 1919

(1) New light from prehistoric India. I. Scripts and Signs from Indian Neoliths.

The author describes a few neolithic implements obtained from different parts of India. These have certain markings on them which are identified as scripts and signs of the neolithic age.

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323 ———— JDLCU, I, pp 113–200, 1920

(2) Prehistoric cultures and races in India.

A summary of the knowledge regarding prehistoric India is attempted under the headings of (i) the dawn of humanity in India, (ii) the pre-chellean cultures of the river-drift man, (iii) the chellean, acheulean and mousterian cultures, (iv) the Karnul cave dwellers, (v) the last palæolithic phase, (vi) the Bellary neolithic settlement, (vii) the neolithic Indians, (viii) the copper and bronze cultures, (ix) the iron age peoples, and (x) the prehistoric pottery and the marks. Amongst the author's conclusions may be mentioned the opinion that the pre-dynastic Egyptians and the chalcolithic Indian very likely belonged to a common Erythræan race.

324 ———— PASB, N. S., XVII, p ccxlvii, 1921

(3) The Indian megaliths—their origin and chronology.

According to the author the variety and the distribution of the megaliths in India indicate that they were in all probability due to an Indo-Erythracean culture-complex 'beginning in time contemporaneous with pre-dynastic and proto-dynastic Egypt and continuing up to the days of the Dravidian domination'.

325 ———— PASB, N. S., XVII, p ccxlvii, 1921

(4) Prehistoric antiquities from Ghatsila.

A palæolithic, a small neolith and neolithic rock-carvings are reported.

326 ———— JASB, N. S., XVII, pp 279–285, 1921

(5) Prehistoric writing in India and Europe.

According to the author, there are evidences to show that there is a large amount of Minoan element in the early chapters of the Indian proto-history.

327 ———— PISC, (9th), p 164, 1922

(6) Prehistoric Archæology.

Only the title was published.

328 ———— JDLCU, III, pp 159–224, 1920

(7) Prehistoric arts and crafts of India.

A summary of information regarding prehistoric India is given chiefly under the headings of (i) old stone age, (ii) the neolithic types of India, (iii) prehistoric art, (iv) prehistoric pottery and terra-cottas, and (v) prehistoric metallurgy.

329 ———— pp vi–xiii, pp 1–285, 1923

(8) Prehistoric India.

A general treatise on the subject.

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330 ———— 1927

(9) Prehistoric India.

This is the second edition of the work No. 8 mentioned above.

331 ———— PISC, (14th), p 307, 1927

(10) Stone implements from the Seraikela State.

Only a short summary of the paper was published.

332 Mitra, Raja R. L. PASB, p 134, 1870

(1) Remarks on the silver and copper specimens exhibited by A. Bloomfield, Esq.

A few remarks of a general type are recorded.

333 ———— PASB, p 160, 1877

(2) Remarks on the communication of W. T. Blanford. (See No. 12.)

Special attention was drawn to the fragments of glazed pottery and specimens of glass.

334 Mockler, E. PASB, pp 172–174, 1876

(1) Ancient dwellings and tombs at Sutkagen Dor and Damba Koh near Guadar in Makran (Baluchistan).

The description of a few localities containing the dwellings and the tombs is given. They are not far from Makran. Pottery, charcoal, bones, flint weapons, iron implements, articles of copper, etc., are found. The cairns, locally known as dambs, may be square, oval or circular; some of them have openings, others are without them. It has been suggested that 'in all these dambs the bones were collected after the body had decomposed'.

335 ———— JRAS, N. S., IX, pp 121–134, 1877

(2) On ruins in Makran.

A description of ancient ruins and their contents. The remains are supposed to be Scythian and, not impossibly, monuments of the ancestors of the Brahmi tribes who now occupy the eastern border of the Baluchistan.

336 Morgan, J. de Tome III, L'Asie anterieure, 1927

La préhistoire Orientale.

In this comprehensive work (posthumously published by Louis German) besides occasional references to Indian prehistory which are also found in the other two volumes, a short summary of Indian prehistory is given (pp. 124–135) together with a map of India showing parts of the country where palæolithic instruments are known to occur.

337 Mortillet, G. A. de 1910

La préhistoire.

Miscellaneous things are dealt with on the pages 62, 362, 370, 380, 396, 495, 553, 593-594, and 624.

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338 **Mulheran, J.** PASB, pp 116–118, 1868

(1) Cromlechs of Central India.

The majority of the cromlechs consists of a number of upright stones sunk into the ground in the form of a square, and covered with one or two large slabs of sand-stone. In some are to be found the remains of two bodies, in others of only one.

339 ——— PASB, pp 147–151, 1868

(2) Notes on the crosses and cromlechs of Chindwara district.

The cromlechs are supposed to be the work of a race of people far more civilized than the Gonds.

340 **Murray-Aynsley, H. G. M.** IA, XV, pp 316–317, 1886

(1) Some hints in looking for megalithic monuments and stone implements in India.

A list of useful hints is to be found in this note.

341 ——— IA, XV, pp 61 et seq. ; Vol, XVI, pp 8 et seq., 1886–1887

(2) Discussive contribution towards the comparative study of Asiatic symbolism.

The different types of symbolism prevalent in many parts of the world are studied and compared. The author concludes that 'if *pace* the latest researches, we once open our eyes to the possibility that Asia was the cradle of most of the nations of Europe, a new light seems to break in upon us, and any symbols or customs acquire a value to us which they had not before. We are compelled to own that the people of the so-called Bronze Age were not the Keltic savages which we once imagined them to be ; that the people of the Stone Age were clever in their generation ; and that the Sun and Moon worshippers ..... were the pioneers of civilization'.

342 **Narsimmiyengar, V. N.** IA, II, p 133, 1873

Legend of the menhirs of Maisur.

This gives an account of a legend associated with *Vyasanatolu Kallu*, a type of Hassan menhir. The legend indicates the bitter animosity existing between the followers of Siva and Vishnu.

343 **Newbold, T. J.** JASB, V, pp 670–671, 1836

(1) Note on the occurrence of volcanic scoria in the Southern Peninsula.

The paper contains the notice of a scoriaceous hill in the neighbourhood of Bellary. No traces of any volcanic activity were found and the local tradition describes the scoriae as being the burnt bones of a *Rakshasha* of the Dwapar Yug. Incidental references are also to be found to similar scoriaceous mounds in other parts of the country, e.g., in Mysore.

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344 ——— JRAS, VII, pp 129–136, 1843

(2) On some ancient mounds of scorious ashes in Southern India.

A few mounds are described among which the Budigunta mound (near Bellary) is the best. According to the local traditions, these mounds of ashes are the burnt bones of the giant *Rakshashas* mentioned in the epics, but the author thinks that the majority of them contains ashes of persons slain in a battle-field and burnt collectively.

345 ——— MJLS, XIII, pt. 2, p 192, 1844

(3) Note on a few specimens from some caves in the lime-stone rocks of Billa Soorgum, Kurnol territory..and a few fossilized bones.

The presentation of a few fossilized bones to the Madras Literary Society is recorded.

346 ——— JASB, XIII, pp 610–615, 1844

(4) Notes on the osseous breccia and deposits in the Caves of Billa Soorgum, Lat. 15° 25′, Long. 78° 15′, Southern India.

The discovery of the caves with stalactites and stalagmites is recorded. Mammal bones were met with in the caves and their resemblance with similar cave-relics of Europe are pointed out.

347 ——— JRAS, XIII, pp 90–95, 1852

(5) Ancient Sepulchres of Panduvaram Dewal, in Southern India.

A few ancient sepulchres near Chittor (North Arcot) are described. A general outline of their structure is given, showing that they are made of stone slabs, one of which has a circular aperture through which the body of a moderate sized man could have been pushed in. According to the local traditions, the sepulchres were inhabited by the pigmies but the human bones found therein do not support this idea. A terra-cotta sarcophagus filled up with human bones is described. The persons who erected these sepulchres were very little advanced in the arts, though their pottery was often very fine and they knew the art of smelting and working iron. The author thinks that these sepulchres are almost the only relics of an extensive migration, at a period of high antiquity, of one family of the human race, radiating in various directions from one given centre, at a time 'when the whole earth was of one family and one speech'.

348 **Noetling, F.** VBGAEU, XXIII, pp (694)–(695), 1891

(1) Prähistorische Steinwaffen in Ober-Birma.

A small stone-celt of the curious shouldered type is described.

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349 ——— RGSI, XXVII, pp 101–103, 1894

(2) On the occurrence of chipped (?) flints in the Upper Miocene of India.

The author describes a number of flint artifacts including one of a rectangular type coming from a bed of ferruginous conglomerate which is of Pliocene or Upper Miocene age. A tooth of *Hippotherium antelopinum*, Caut. and Falc. was also found with the flint chips.

350 ——— VBGAEU, XXVI, pp (427)–(433), 1894

(3) Ueber das Vorkommen von behauenen (?) Feuerstein-Splittern im Unter-Pliocän von Ober-Birma.

This is practically the paper No. 2 of the same author.

351 ——— VBGAEU, XXVI, pp (588)–(593), 1894

(4) Über das Vorkommen von Werkzeugen der Steinperiode in Birma.

A general survey of the stone implements found in Burma is worked out. Attention is drawn to the rarity of these implements. In the central part styled by the author as Burma proper no implements were found though they are comparatively abundant in the Western part, i.e., in the region of the Arakan. The author deals with the use of the shouldered celts also.

352 ——— RGSI, XXX, pp 242–249, 1897

(5) Note on a worn femur of *Hippopotamus irravadicus*, Caut. and Falc. from the lower Pliocene of Burma.

The worn femur is described. Traces of grinding are found on both extremities and the author is of opinion that not unlikely the attrition was produced artificially.

353 ——— NSc, X, pp 233–241, 1897

(6) On the discovery of chipped flint-flakes in the Pliocene of Burma.

In this paper the author criticises the opinion of Mr. Oldham who doubted if the implements were found *in situ* and brings forth reasons for upholding the opinion expressed by him previously. The author also refers to an additional evidence of a polished femur or humerus found in the ferruginous conglomerate in which the chipped flints were met with.

354 ——— VBGAEU, XXX, pp (460)–(470), 1898

(7) Über eine prähistorische Niederlassung im oberen Zhob-Thal in Baluchisthan.

Two artificial mounds near Fort Sandeman are referred to and the finds got therein are briefly described. They are stone implements, bronze (?) celts, arm-bands, necklaces, meal-stone, whorl of a spindle, articles of lapis lazuli and of agate, ornamented clay, vessels, etc. The author is of opinion that the settlements belong to one and the same period of human culture

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when the people must have had some connection with Afganisthan and Persia on the one hand and with India on the other.

355 ———— VBGAEU, XXXI, pp (100)–(110), 1899

(8) Ueber prähistorische Niederlassungen in Baluchisthan.

In this paper reference has been made to seven prehistoric colonies in British Baluchisthan as indicated by a number of mounds. Ash, calcined animal bones, metallic substances, stone implements, ornamented clay vessels, miscellaneous articles including an oil lamp, necklaces of various articles, arm-bands of clay, glass-fragments, etc., were found in these mounds. The author thinks that the relics are due to the contact between two races of people under two different cultural stages.

356 **Oakes**, R. E. PASB, pp 51–53, 1869

Flint implements collected in the neighbourhood of Jubbulpore.

A short note of a few localities bearing flint implements is given.

357 **Olden**, C. JBORS, V, pp 150–151, 1919

Note on a discovery of ancient copper smelting apparatus at Rakha in the Dalbhum Paragana of Singhbhum.

Some suggestions are given as to the methods employed by the ancients for the smelting of copper from its ores.

358 **Oldham**, R. D. PASB, pp 159–161, 1884

(1) On fossil bones from the Jumna alluvium.

The fossils exhibited include teeth of hippopotamus and a quadrate bone of a large ruminant most closely allied to a giraffe.

359 ———— NSc, VII, pp 201–202, 1895

(2) The alleged Miocene man in Burma.

In this paper the author controverts the opinion of Dr. Noetling regarding the Miocene or Pliocene age of the implements found in Burma, and is of opinion that 'there is a possibility of the flakes.....having been dropped on the spur, or washed down from the plateau above, and subsequently become possibly embedded in the weathered surface'.

360 ———— PASB, p 123, 1897

(3) (An important collection of rude stone implements from Central India, exhibited and described at the monthly meeting of the Asiatic Society of Bengal for August, 1897.)

361 **Oldham**, T. PASB, XXXIII, pp 67–68, 1864

(1) Stone implements discovered by Messrs. King and Foote near Madras.

The implements are all of the palæolithic type and made of quartzite. These are described as being the first Indian implements found *in situ*.

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362 ——— PASB, pp 206–208, 1865

(2) A fine series of stone implements of the Amiens or Post-Pliocene type, discovered by Messrs. Foote and King in the lateritic gravels around Madras.

A short observation on the Madras finds and an incidental reference to the discovery of an artificially worked agate flake in the valley of the Godavari by Mr. Wynne.

363 ——— PASB, pp 251–252, 1868

(3) On copper implements found in Mainpuri.

The implements were found buried in a field. They include a flat celt, a spear-head of a peculiar form and a number of rings, obviously old bangles or wristlets but very similar to the 'ring-money' of the antiquarians of North Europe.

364 ——— RGSI, I, pp 65–69, 1868

(4) On the agate flake found by Mr. Wynne, in the Pliocene (?) deposits of the Upper Godavari.

A description of the chipped flake and a discussion of the age of the beds in which it was found are recorded in this note.

365 ——— PASB, pp 186–187, 1868

(5) Remarks on R. A. Cole's 'note on cromlechs in the vicinity of Veerajenderpett'.

From an examination of the iron contents it is concluded that the period of their entombment must have been much less than what would at first appear justified by the rude and unhewn nature of the structures in which they occur.

366 ——— PASB, p 60, 1869

(6) Bronze implement found near Jubbulpur.

The short note contains a reference to a bronze axe found near Jubbulpur—the first discovery of a bronze implement in India.

367 ——— PASB, pp 226–235, 1869

(7) Notes on the remains found in a cromlech at Coorg.

The remains include one legged vessel of baked clay, a few non-legged vessels of unbaked clay, a few beads of carnelian, and a circular ring of copper to which was joined a thin plate of gold by continued pressure. It is suggested that the articles are not of any very great antiquity.

368 ——— PASB, p 53, 1869

(8) Remarks on the communication by R. E. Oakes.

A similarity is pointed out between the finds of Mr. Oakes and those noticed in parts of Europe.

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369 ———— PASB, p 134, 1870

(9) Remarks on the silver and copper specimens exhibited by A. Bloomfield, Esq.

Doubts are expressed regarding a close comparison between the articles exhibited and the implements found in the copper age of Europe.

370 ———— PASB, pp 233–234, 1871

(10) Remarks on a note of Captain W. L. Samuells.

Attention is drawn to some peculiar features of the implements which were of the rudest type.

371 ———— RGSI, IV, pp 69–81, 1871

(11) Sketch of the Geology of the Central Provinces.

Reference is made to the occurrence of neolithic and palæolithic implements in parts of the Central Provinces.

372 ———— PASB, p 144, 1884

(12) Remarks on a paper by J. Cockburn. (See No. 4.)

The criticism shows that Dr. Oldham could not agree with the opinion that the drawings were modern.

373 **Ormsby**, M. H. PASB, pp 136–153, 1867

Stone implements found in India.

See W. T. Blanford, No. 3.

374 **Parker**, H. pp i–xiv, 1–695, 1909

(1) Ancient Ceylon.

It contains a short reference to the stone implements found in Ceylon which may be of palæolithic or neolithic age. The implements include arrow-heads 'notched on both sides near the butt end for tying to the shaft'. Dolmens or circles of stone are not known and no stone axes have also been found.

375 ———— SZ, IX, p 142, 1913

(2) Note on the paper of Mr. F. Lewis (No. 2).

A note criticising the view of Mr. F. Lewis regarding the origin of the cup-marks.

376 **Parsons**, J. SZ, IV, p 190, 1907

(1) Further notes on Vedda implements.

The author notes some implements from the caves of Ceylon. He thinks that they are too ill-shaped to be considered as belonging to the Magdalenian type but are more like the eoliths.

377 ———— SZ, V, pp 171–177, 1908

(2) The modes of occurrence of quartz in Ceylon.

A note on the different forms of quartz is given. The various types of quartz used in the manufacture of implements

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at different localities are also pointed out with a hope that they may be of some help to local collectors of stone implements in their work.

378 **Pascoe,** Sir E. H. MGSI, XL, pt. i, pp 1–269, 1912

The oil-fields of Burma.

Reference is made (pp. 53-54) to the Noetling—Oldham controversy regarding the *in situ* character of the implements described by Noetling (see No. 2) and it is suggested that they might have fallen from above as suggested by R. D. Oldham (see No. 1).

379 **Peal,** S. E. PASB, pp 135–138, 1872

Communication dealing with a model illustrating the Naga method of climbing large trees, and a celt.

The celt was dug out from a tea-factory at a depth of 2 feet below the surface.

380 **Peet,** T. E. RBAST, pp 609–610, 1912

Discussion on megalithic monuments and their builders: (ii) Are we justified in speaking of a megalithic race?

According to the author, the megalithic monuments found in several parts of the world including India are due to the migration of some great races which practised the megalithic architecture.

381 **Persgrave,** Captain. AR, XIV, App III, [p. 3], 1822

(Copper head of a spear, found at Betoor. Presentation to the Museum of the Asiatic Society.)

382 **Phayre,** Sir A. P. JASB, XXXIX, pp 58–59, 1870

(1) Note on a circle of stones situated in the district of Eusoofzye.

A circle of tall upright stones, with traces of an outer circle of smaller stones surrounding it, is described. The structure is locally known as *Lukki Tiggi*, i.e., upright stones. The youngest date that may be ascribed to the circle is pre-Buddhist.

383 ——— PASB, p 3, 1876

(2) Note on stone implements from Burma.

The author refers to the discovery of the Burma type of implements by Ball and suggests a connection between the Kols and the Muns of Pegu in prehistoric time.

384 **Phear,** J. B. PASB, pp 136–153, 1867

(1) Stone implements found in India.

See W. T. Blanford (3).

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385 ———— PASB, pp 187–188, 1868

(2) Remarks on R. A. Cole's 'note on cromlechs in the vicinity of Veerajenderpett'.

Attention is drawn to some resemblance existing between the earthen vessels found in the cromlechs and those used by the people of the present day.

386 **Phillips**, The Rev. M. IA, II, pp 223–228, 1873

Tumuli in the Salem district.

The tumuli are of the iron age and supposed to have been the burial places of ancient non-Aryan aboriginal inhabitants of the South who are not represented by the Dravidians. The skull remains found in the tumuli show that persons interred therein were of the ordinary human size. These persons were fairly advanced in civilisation as shown by their domestic articles, ornaments, etc.

387 **Piddington**, H. JASB, X, pp 620–625, 1841

Note on the fossil jaw, sent from Jubbulpur by Dr. Spilsbury.

The note contains a detailed description of a fossil elephant jaw.

388 **Pilgrim**, G. E. RGSI, XXXI, pp 176–177, 1904

(1) Pleistocene fossils from the Ganges Alluvium.

A list of the mammalian Pleistocene fossils found in the Ganges alluvium at Allahabad.

389 ———— RGSI, XXXII, pp 199–216, 1905

(2) On the occurrence of *Elephas antiqus* (*namadicus*) in the Godavari Alluvium, with remark on the species, its distribution, and the age of the associated Indian deposits.

According to the author, the Godavari and the Narbada alluvial deposits are of approximately the same age which is not earlier than the lower Pleistocene.

390 ———— RGSI, XXXV, pp 120–121, 1907

(3) Note on a cranium of *Boselephas namadicus* Rütim. from the Narbada Pleistocene gravels of Jubbulpur.

A short note on the fossil found in the Nagpur Museum.

391 ———— RGSI, XLV, pp 1–74, 1915

(4) New Siwalik Primates and their bearing on the question of the evolution of Man and the Anthropoidea.

This paper contains the description of *Sivapithecus indicus* included under the Hominidæ by the author according to whom it is possible that the human ancestor might have belonged to the same genus as the mandible of *Sivapithecus indicus*. The author, however, is of opinion that 'for the present' it is preferable 'to consider the human ancestor as a marginal species of *Sivapithecus*'.

सन्दर्भ ग्रन्थ
REFRENCE BOOK

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392 ———— PISC, (12th), pp 200–218, 1925

(5) The migration of Indian Mammals.

In this paper the ages of the mammaliferous beds of India have been discussed. A middle Pleistocene age has been assigned to the older alluvia of the Narbada and the Godavari and the Karnul fossils have been ascribed to the upper Pleistocene age.

393 Pole, J. JRASC, XIX, pp 272–281, 1907

(1) A few remarks on prehistoric stones in Ceylon.

A short account of palæoliths and of a few stones belonging to the (?) eolithic age is given. It is presumed that the implements were manufactured by the prehistoric Veddas.

394 ———— 1913

(2) Ceylon stone implements.

395 Prinsep, J. JASB, II, pp 434–438, 1833

(1) Chemical Analyses.

Analyses of three specimens of copper spear-heads obtained in the neighbourhood of Etwa show that though the implements indicate the presence of tin, it is present there as an impurity and not mixed up intentionally.

396 ———— JASB, II, pp 583–588, 1833

(2) Note on the fossil bones discovered near Jubbulpur.

A short account of the fossils as also a note of the locality they were found in.

397 ———— JASB, III, pp 396–403, 1834

(3) Note on the fossil bones of the Nerbudda valley, discovered by Dr. Spilsburry, near Narsinhpur, etc.

A description of a fossil elephant femur and the head of a fossil buffalo.

398 Radcliffe, E. IF, XXXII, pp 312–314, 1906

Cave deposits in Kashmir.

The note contains a description of the Imselwara caves and the animals found therein. The remains are supposed to be of the same age as those of the caves of Billa Surgam, Karnul.

399 Ramayya, J. ARASMC for 1904–1905, pp 38–42, 1905

A note on the antiquities of Peddamudiyam.

The prehistoric finds at Peddamudiyam (Cudappah) include pottery, iron, and neolithic implements.

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400 Ramsay, W. IA, I, p 258, 1872

Notes on the " Gauli Raj ".

The author refers to the groups of monumental stones found in parts of the Central Provinces. These stones are ascribed to the Gauli Raj. The author thinks that the Gauli Raj is possibly the contemporary of the Gond Raj.

401 Rama Varma, (H. H.). IA, VII, pp 26–27, 1878

Sepulchral urns in the district of Koimbatur.

Pitcher-shaped sepulchral urns and the stone chests in which they were contained are described. Partly calcined bones as well as spear- and arrow-heads are found inside the urns. According to the local legend, the places where the sepulchres are found were the habitations of a race of pigmies.

402 Rao, B. R. PISC, (12th), p 262, 1925

Observations on some of the megalithic monuments in the vicinity of Halgur and Chennapatna (Mysore State).

Three different types of megalithic monuments are distinguished and the antiquity of the different classes is discussed.

403 Rea, A. JASB, LVII, pt I, pp 48–71, 1888

(1) Some prehistoric burial-places in Southern India.

The paper contains a description of the megalithic remains at Pallavaram, Perianattam (near Chingleput), a few places around Madura (Dadampatti, Paravi, and Anapandi) and the Palni hills (near Kodaikanal).

404 ———— ARASMC for 1902–1903, pp 11–14, 1903

(2) Adichanallur excavations.

Articles of bronze, iron and pottery are described.

405 ———— ARASMC for 1903–1904, pp 18–30, 1904

(3) An account of excavations conducted during the year 1903–1904.

Prehistoric antiquities of Adichanallur, Kilanattam and Thirutha (Tinnevelly) are described. The articles include various types of pottery, iron implements, bronze articles, human skulls, ornamented urns, etc., while a cup-marked stone is recorded among the Adichanallur finds.

406 ———— ARASI for 1902–1903, pp 111–140, 1904

(4) Prehistoric antiquities in Tinnevelly.

Prehistoric mounds are very common in the valley of the Tampraparni river and a large number of them has been located on a map accompanying the paper. The sepulchres with urns have been found generally in places in the neighbourhood of the sites of the ancient towns. The age of the urns is not anterior to that of the Pandyans. The mound at Adittanallur is the most important of all. It covers an area of 114 acres. The contents of urns are numerous and include various types of

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pottery, iron implements, bronze vessels and ornaments, gold diadems, bones, stone beds, household stone implements, traces of cloth, etc. No bronze or stone implements were met with. According to the author 'the people....appear to have been skilful in moulding pottery, on casting or brazing metals in weaving, and in working stone and wood. That they were acquainted with agriculture is shown by the iron spades for digging, and the presence of husks of rice and millet. Some of the iron implements are for sacrificial purposes, others are for the chase or war..... Their religion was probably devilworship..... The attempts at art in casting animals in bronze and at ornamenting that metal indicates a primitive workmanship'.

407 ——— ARASMC for 1903–1904, pp 52–55, 1904

(5) South Arcot district.

Prehistoric dolmens in the neighbourhood of Tindivanam are described. A few pieces of pottery are noted. These dolmens are locally known as the 'Valiars' caves.

408 ——— ARASMC for 1904–1905, pp 36–38, 1905

(6) Excavations.

The find at Vijaynagar (Bellary) of an underground vaulted chamber with human remains of an unknown age is recorded, and a short note dealing with the antiquities at Perambair (Chingleput) is also published.

409 ——— ARADM for 1905–1906, pp 2–3, 1906

(7) Excavation of ancient sites.

The discovery of palæolithic and neolithic celts at Amaravati is recorded while attention is also drawn to the large number of stone circles at Perambair (Chingleput).

410 ——— ARASI for 1903–1904, pp 158–163, 1906

(8) Prehistoric pottery from Tinnevelly.

Various kinds of pottery are described. The only ornamentations on the objects are of a very simple type, often mere thumb-marks.

411 ——— ARADM for 1906–1907, pp 2–3, 1907

(9) Excavation.

A short notice of the prehistoric remains near Pallavaram (Chingleput) is recorded. Prehistoric remains were also found near Gingee (South Arcot) and at Kambillyambatti (Madura).

412 ——— ARADM for 1907–1908, pp 1–3, 1908

(10) Excavation.

Cromlechs occurring in the neighbourhood of Perambair (Chingleput) are briefly described. The finds include cists with three rows of legs, four legs being on each row.

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413 ———— ARADM for 1909–1910, pp 20–23, 1910

(11) Excavation.

A few cromlechs occurring in Salem are noted.

414 ———— ARADM for 1910–1911, pp 10–15, 1911

(12) Excavation.

The prehistoric caves of Perumangalam are described. The cairns are in the lateritic rocks and the contents are sepulchre remains, iron implements, various types of pottery with four legged jars, and some stone circles. The prehistoric remains at Kaniyampundi are found to be chiefly sepulchral and various types of pottery, iron implements and bones.

415 ———— ARASI for 1908–1909, pp 88–91, 1912

(13) Excavations at Amaravati.

A short notice of a few neolithic graves and a number of palæolithic and neolithic implements is recorded.

416 ———— ARASI for 1908–1909, pp 92–99, 1912

(14) Prehistoric remains at Perambair.

A number of cromlechs near Perambair is described. Among the contents are found stone and iron implements, pottery, bones, shell ornaments, etc. A human skeleton was met with in a cross-legged posture. Oblong cists with thumb-mark ornaments on the ends and jars with legs and spouts are also among the finds.

417 ———— pp i–xiii, 1–49, 1915

(15) Catalogue of the prehistoric antiquities from Adichanallur and Perambair.

The book contains a description of articles obtained from the excavations at Adichanallur and Perambair. The Adichanallur finds include objects of gold, bronze and iron, pottery and human bones, while those of the second locality are pottery and large earthenware sarcophagi.

418 Richards, F. J. JRAI, LIV, pp 157–165, 1924

Note on some iron age graves at Odugattur, North Arcot district, South India.

Three graves have been described with an inventory of the numerous articles found in them including different kinds of jar, objects of *chank* shell and utensils of stones.

419 Rivett-Carnac, H. PASB, pp 54–58, 1870

(1) Specimens of iron and other implements found in tumuli near Nagpur.

Attention is drawn to the presence of the tumuli of a particular type in Southern India and their continuance to Nagpur through the Deccan. Nothing is known regarding their occurrence in the country lying between Nagpur and the Punjab

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They are found abundantly on the Indian frontier and from thence can be traced through Central Asia and Russia into Northern Europe.

420 ——— JASB, XLVI, pt I, pp 1–15, 1877

(2) Rough notes on some ancient sculpturings on rocks in Kumaon, similar to those found on monoliths and rocks in Europe.

Different types of cup-markings are described. The local people attribute them to 'the giants or the *goalas*, who in their minds mean the far past'. The author takes the markings to be 'but a conventional rendering of the Mahadeo and Yoni'.

421 ——— IA, VIII, pp 177–178, 1879

(3) Miscellanea.

The author points out that the celts found in Banda, Jubbulpur and other parts of India are worshipped as *Lingas*.

422 ——— JASB, XLVIII, pt I, pp 1–16, 1879

(4) Prehistoric remains in Central India.

The following conclusions are drawn by the author :—

(i) The shape of the tumuli in India and in Europe is the same.

(ii) The barrows in India and in Europe always face towards the south.

(iii) The remains found in the Indian barrows resemble almost exactly the remains dug out of similar burial places in Europe.

(iv) The cup-marks on the boulders which surround the Indian tombs are identical with the marks found in the stones placed around the same class of tumuli in Europe.

423 ——— PASB, pp 6–8, 1882

(5) Stone implements found in the Banda district.

A number of celts, both polished and chipped, is described. Large quantities of flint flakes are also noted. Some of the implements were found *in situ*.

424 ——— BSAP, 3rd Ser. VI, pp 80–83, 1883

(6) Epoque de la pierre polie dans l'Inde.

In this paper a short account is given of the prehistoric finds of J. Cockburn and the author at Banda. Polished and dressed implements were found and possibly all were in use simultaneously. Attention is drawn to a unique type of hammer and to a sculpture showing a native armed with a stone-axe. The sculpture may be of the seventh century A.D.

425 ——— JASB, LII, pt I, pp 221–230, 1883

(7) On stone implements from the North-Western Provinces of India.

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The specimens include different types of hammer-stones including grooved ones and celts of which some are polished and some chipped. One specimen has been recognised as a pivot.

426 ———— JAI, XIII, pp 119–120, 1884

(8) Collection of stone implements from Banda.

A large number of celts, both chipped and polished, is described. Both the types were used simultaneously. Ethnic affinities of the collection are dealt with and attention is drawn to a piece of sculpture showing an aborigin armed with stone-axe.

427 ———— 1886

(9) On flint implements from Central India. Journal of antiquity and Scientific Society of the Provinces of India.

428 ———— IA, XXIX, p 236, 1900, (from P. N. and Q. 1883)

(10) Stone implements in India.

Attention is drawn to the fact that stone-hatchets found in the districts of Banda and Mirzapur are worshipped as *Mahadeva.*

429 **Roth, T. R.** JASB, X, pp 627–628, 1841

Remarks on fossil discoveries in the valley of the Nerbudda.

The author suspects the presence of Palæotherium among the Narbada fossils.

430 **Roy,** S. C. pp i–x, 1–546, i–lxxxiii, 1912

(1) The Mundas and their country.

The author has referred to the prehistoric antiquities found chiefly in the United Provinces of Agra and Oudh, and Chota Nagpur, and concludes that there are 'grounds for inferring that the Mundas and other Kolarian tribes originally lived in the hilly regions along the Aravalli and Vindhyan ranges and gradually spread to the north and occupied the valleys of the mighty rivers of Northern India'. This was followed by an intermixture with the Dravidians. 'Such an intermingling of races . . . . . has been steadily at work since neolithic times, and to this process of miscegenation we owe the blurring of all primeval types'.

431 ———— JBORS, I, pp 229–253, 1915

(2) A note on some remains of the ancient *Asuras* in the Ranchi district.

Allusion is made to the stone, copper and iron implements as well as to the sepulchral stones and cinerary urns.

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432 ———— JBORS, II, pp 485–487, 1916

(3) A find of ancient bronze articles in the Ranchi district.

A number of bronze articles and a handi of copper are described. Doubts have been expressed regarding the claims of any great antiquity for them.

433 ———— JBORS, II, pp 61–77, 1916

(4) Note on some prehistoric stone implements found in the Ranchi district.

Different types of implements, chiefly neolithic, are described. A reference is made to the local superstitions in connection with these implements. The author thinks that these implements were probably in use even in the early iron age.

434 ———— JBORS, II, pp 481–484, 1916

(5) Relics of the copper age found in Chota Nagpur.

Copper celts from the Palamau district are described and found to be similar to the Gungeria specimens.

435 ———— JBORS, VI, pp 393–423, 1920

(6) Distribution and nature of *Asur* sites in Chota Nagpur.

A list of villages in the districts of Ranchi and Palamau where *Asur* sites have been noticed or reported from is given while one burial site (Khutotoli) is described in detail with its contents of a varied type showing evidences of a palæolithic, neolithic, copper and an early iron age culture. Human bones have been found in the urns. The skull shows prominent cheek-bones and a very slight prognathism; and its capacity is much below the normal. The results of the analyses of a few bronze, brass and copper articles are also published.

436 Sahni, D. R. ARASI for 1924–1925, pp 73–80, 1927

Exploration and Research. Northern Circle, Punjab, Harappa.

A short account of the recent excavations at Harappa. The finds include painted potsherds, pictographs, stone rings, animal bones, etc.

437 Samuells, W. L. PASB, pp 231–233, 1871

Two copper axes.

Two copper axes found on the top of a hillock at Pachamba (Hazaribagh) are dealt with. One of the specimens was probably used as a head for a battle-axe.

438 Sandford, J. R. JASBom, III, pp 461–471, 1894

Notes on the recent opening of some prehistoric graves in the Coimbatore district, Madras Presidency.

A number of graves is described. Besides a large number of pottery of various shapes, the contents of the graves include iron-swords and spear- and arrow-heads as also human and other

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mammalian bones. A simple copper or bronze bracelet with scratchings on them was met with. These scratchings might have been the letters of an alphabet or merely the owners' marks. According to the local tradition, the chambers opened out are not graves, but the dwelling-places of a pigmy race. The size of the human remains, however, does not go to support the theory about the pigmy race.

439 Sarasin, F. and P. SZ, IV, pp 188–190, 1907

(1) Stone implements in Vedda caves.

Finds from a few caves are described. The antiquities obtained from the caves belong to the Magdalenian period, but from the peculiarity of the materials employed for the manufacture of the implements, the author is of opinion that they may represent a special type—*facies veddaica*. The Veddas are autochthonous. The palæolithic age in Ceylon was at once followed by an iron age without the intervention of a neolithic age.

440 ——— ZLV, XCI, pp 255–256, 1907

(2) Die steinzeit der Weddas.

441 ——— 1908

(3) Ergebnisse naturwissenschaftlicher Forschungen auf Ceylon-Bd. IV. Die steinzeit auf Ceylon.

442 Sastri, H. JASB, N. S., XI, pp 1–6, 1915

Recent additions to our knowledge of the copper age antiquities of the Indian Empire.

A few copper implements including harpoons and hatchets obtained chiefly from the United Provinces are described.

443 Saxton, G. H. PASB, pp 52–54, 1870

A set of iron implements, etc., found in a cromlech in the estate of Major Sweet in the south of the Nilghery plateau.

This is a short note with a record of implements of iron (?) and of brass.

444 Schmid, Rev. B. JRASBom, III, pp 50–53, 1849

Remarks on the origin and language of the Aborigines of the Nilghiris, suggested by the papers of Captain Congreve and the Rev. W. Taylor on the supposed Celto-Scythic antiquities in the south of India.

According to the author the Todavar language is a very rude dialect of the ancient Tamil, and there is no connection between that language and Arabic, Hebrew, Sanskrit, Persian, Gothic or Celtic.

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445 Schmidt, E. ZLV, LXXXI, pp 213–218, 1902

Dre Prähistorie des südlichen Indien.

446 Schœtensack, O. ZE, XIX, pp 119–148, 1887

(1) Nephritoid-Beile des Britischen Museums.

Reference is made to the number of stone-celts procured during an expedition to West Yunan, *via* Bhamo, and very likely some of them, at least, were obtained from Burma.

447 ——— VBGAUE, XXXIII, pp (522)–(527), 1901

(2) Ueber die Bedeutung der "Hocker." Bestattung.

Here reference has been made to the megalithic graves of Bellary.

448 Seligman, C. G. M. VIII, pp 113–116, 1908

Quartz implements from Ceylon.

An account of the implements including a list of the localities where they were found is given. Implements have also been observed in caves together with bones and fragments of pottery. The implements are supposed to be neolithic and, from their nature and distribution, show 'that at one time there must have been in Ceylon a considerable population who worked quartz, and that this people was widely distributed, extending at least from the Southern into the Central and the Eastern Provinces and occupying heights varying from the low forest country of the Eastern Province to at least 4,000 feet'.

449 Seligman, C. G. and B. Z. SZ, V, pp 155–170, 1908

An itinerary of the Vedda country.

A few implements, fragments of pottery and bones of animals are described. The implements are supposed to be neolithic in age.

450 Sen-Gupta, K. K. PASB, N. S., XII, pp cxxiv-cxxv, 1916

On the chronological sequence of some megalithic monuments.

A short account of the different kinds of dolmens found in different parts of India is given and a chronological arrangement of these monuments is attempted.

451 Seton-Karr, Sir H. W. JASBom, VI, pp 281–282, 1903.

(1) Prehistoric Indian stone implements of palæolithic type.

The implements were either found in the lateritic deposits or washed out of them, and are apparently of the same age as the lateritic beds.

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452 ———— JNHSBom., XV, pp 146–148, 1903

(2) Prehistoric-man-hunting in India.

Attention is drawn to the resemblance existing between a few palæolithic implements found in laterite and the palæoliths found in the lowest stratum of Kent's cavern known as the Breccia.

453 ———— M, IX, p 137, 1909

(3) Some recent Indian palæolithic implements.

Four palæoliths found in the valley of the Pennar river are described.

454 **Sewell**, R. JRAS, pp 1–16, 1899

(1) The cinder-mounds of Bellary.

Attention is drawn to a large number of cinder-mounds in the Bellary district. According to the author, some of these may be of neolithic age, but all are not so ancient and reasons are given for assigning some of them possibly to the fifteenth and sixteenth centuries A.D.

455 ———— JRAS, pp 165–170, 1902

(2) Prehistoric burial sites in Southern India.

The note contains a short review of the subject. It is also pointed out that the urn-burial persisted in South India even up to the historic time.

456 **Shaw**, R. B. RBAST, pp 194–197, 1872

Religious cairns of the Himalayan region.

The author refers to the fact that the cairns on the slopes of the Dhaola Dhar, the barren plains and in the rocky valleys of Tibet and in the gorges of the Kuenlin mountains are of a similar nature and orientation, and is led to look upon these cairns as the remains of an early pre-Buddhist type of religion which was prevalent throughout these hills, and perhaps overspread the entire region between India and Turkistan. The author suggests that this primitive religion might have been connected with the worship of the mountain demons.

457 **Silberrad**, C. A. JASB, N. S., III, pp 567–570, 1907

Rock drawings in the Banda district.

Four drawings are described. There is no local tradition regarding these drawings.

458 **Sinclair**, W. F. IA, I, pp 204–205, 1872

(1) On the 'Gauli Raj' in Khandesh and the Central Provinces.

The author refers to a tradition throughout Gondwana and Khandesh of a Gauli Raj and suggests that 'Gauli was the surname or nickname of a family of princes (and not of a nation) of Aryan race who established themselves in the valleys of the

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Tapti and the Narbada during the great migration southward which ended in the colonization of the Deccan by the Aryan Maratta'.

459 ———— JASBom, II, pp 75–79, 1889

(2) Flint remains in the Kolaba district.

The author draws attention to a large number of flint implements and compares them with similar finds from Sindh.

460 Smith, E. JASB, II, pp 622–631, 1833

(1) Notes on the specimens of the Kankar formation, and on fossil bones collected on the Jumna.

The fossils described here are portions of human bones as also bones belonging to elephant, horse, buffalo, etc.

461 ———— JASB, III, p 529, 1834

(2) Fossils from the Jumna.

A short note pointing out the large quantity of the materials collected from the area.

462 Smith, G. E. RBAST, pp 607–609, 1912

Discussion on megalithic monuments and their builders.
(i) Introduction.

The author is of opinion that the idea of tomb-building found in India, Burma, and Ceylon and many other places is of Egyptian origin.

463 Smith, V. A. IA, XXXIV, pp 229–244, 1905

(1) The copper age and prehistoric bronze implements of India.

The paper contains a review of the Indian copper implements found at 14 different places. According to the author, in the greater part of Northern India, the iron age was separated from the neolithic period by an intervening copper age. The Indian bronze implements are very few in number and the author thinks that they were either imported or produced casually and that there is no evidence of an Indian bronze age.

464 ———— IA, XXXV, pp 185–195, 1906

(2) Pygmy flints.

In this paper are to be found a general survey of the modes and places of occurrence of the pigmy flints as also a review of the theories regarding their origin. According to the author, the pigmies may be looked upon as being developed from the minute flakes used by the palæolithic man and possibly manufactured by those of the palæolithic survivors who were subjugated by the neolithic men. The implements were for meeting ordinary purposes.

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465 ——— IA, XXXVI, pp 53–55, 1907

(3) The copper age and prehistoric bronze implements of India—Supplement.

A note is given of bronze (?) and copper implements from Bithur (Cawnpur) and Pariar (Unao).

466 **Skrine**, J. H. PASB, pp 1–2, 1895

Some antique beads and stones.

Reference is made to the finds of beads and stones in the month of June (during the rains) in an alluvial soil at Sabour (near Bhagalpur). There is no local tradition regarding their origin.

467 **Spilsbury**, G. G. JASB, II, p 263, 1833

(1) Presentation of a fragment of a large fossil bone from Jabbalpur.

The bone presented is the jaw of a fossil elephant (?) with quite perfectly preserved teeth.

468 ——— JASB, III, pp 388–395, 1834

(2) Geological section across the valley of the Nerbudda, from Tendukheri to Bittoul.

The paper includes the notice of the upper jaw of a fossil horse found at a place called Bettary on the Nerbuda.

469 ——— JASB, VI, pp 487–489, 1837

(3) Notice of new sites of fossil deposits in the Nerbudda valley.

A short note on the mammalian remains.

470 ——— JASB, VII, p 91, 1838

(4) A letter from the Nerbudda fossil field.

A short note dealing with the fossils.

471 ——— JASB, VIII, pp 950–952, 1839

(5) Notes on various fossil sites on the Nerbudda; illustrated by specimens and drawings.

The paper records a short note of the numerous fossil remains.

472 ——— JASB, X, pp 626–627, 1841

(6) Notes on fossil discoveries in the valley of the Nerbudda.

A short notice of a few fossil remains.

473 ——— JASB, XIII, pp 765–766, 1844

(7) Notes on Nerbudda fossils.

A short notice of a few fossil remains.

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474 St. John. PASB, p 83, 1871

On some North Arracan celts.

Here is a brief outline of a few celts of the usual Burmese type.

475 Steel, E. H. TESL, NS, VII, pp 305–312, 1869

(1) On the Khasia tribe.

The paper contains a short reference to the Khasia monumental stones.

476 ——— PASB, pp 267–268, 1870

(2) Stone implements from Dibrugarh.

A few neolithic celts are described. The celts were all of jade and found among the Namsang Nagas.

477 Still, J. JRASC, XXII, pp 73–101, 1910

Tantra-Malai: Some archæological observations and deductions.

Indications of stone implements are mentioned, while, among other details, attention has been drawn to the cave-drawings of a most primitive type.

478 Stoliczka, F. RGSI, II, pp 36–39, 1869

(1) Note on *Pangshura tecta*, and two other species of chelonia, from the newer Tertiary deposits of the Nerbuda Valley.

Three Chelonian species have been described. One of them is identical with a living species and the other two are allied to two living species. The author suggests that the deposits of the Nerbuda Valley are younger than the Siwalik deposits.

479 ——— PASB, pp 13–23, 1870

(2) Notes on the Kjökkenmöddings of the Andaman Islands.

A Kjökkenmödding near the island of Chatham is described. The study of the find led the author to conclude 'that an aboriginal people was, or still is, very largely subsiding on molluscs which are either collected on the coral-reefs or in the jungles; that the people hunt down the pig—the only large mammal probably to be found, extract the marrow from the bones, employ stone axes and other implements as their daily utensils, that they make a kind of coarse pottery, not burning but drying the same in the sun, that they do not appear to be acquainted with any sort of grain or other kind of cereals, etc.' The importance of the study of the Andaman Kjökkenmöddings is emphasized.

480 Swaminathan, V. S. PISC, (12th), p 266, 1925

Prehistoric archæology or prehistory of the Chingleput and North Arcot districts.

The main features of the prehistoric antiquities of the two places are outlined.

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481 Swiney, J. D. JRASBom., VIII, pp xvii–xviii, 1864

(1) Note on flint and stone implements from Jubbulpur.

The implements noted are microliths, flints, hatchets and an axe.

482 ——— PASB, pp 77–79, 1865

(2) Notes on flint arrow-heads discovered in the Jubbulpur district.

According to the author, four types of implements may be distinguished.

483 Swinhoe, R. C. J. Zo. Ser. 4, VI, pp 321–336, 1902

(1) Prehistoric man in Burma.

In this paper the author is inclined to admit the probability that man existed in Burma or in the Malaya Peninsula in the Tertiary times, but he seems to throw some doubt on the opinion of Dr. Noetling that the chipped flints and the facetted bones are the works of the Tertiary man.

484 ——— Zo. Ser. 4, VII, pp 254–259, 1903

(2) Some further notes on chipped flints at Yenangyoung, Upper Burma.

The occurrence of flint implements in the plateau gravels is noted. The implements are of neolithic age. The author also refers to the occurrences of neolithic implements at the foot of the Mount Popa and several places in Burma.

485 Swynnerton, Rev. C. PASB, p 175, 1880

On a celt of the Palæolithic type found at Thandiani, Punjab.

The communication contains a notice of a palæolithic celt of black closed-grained limestone.

486 Swynnerton, F. JASBom, III, pp 189–197, 1893

(1) On some rude stone implements from Back Bay, Middle Colaba, Bombay.

A number of rude implements of stone is described. They include flakes, flake-crapers, used-up flakes, awls or borers, skin scrapers as also very rude hatchets and hammers. A fossil mammalian tooth was also met with. The author compares these implements with the 'Coast finds' occurring associated with the Danish Kjökkenmöddings.

487 ——— JAI, XXIX, p 141, 1899

(2) Exhibition of rude stone implements from the State of Gwalior, Central India.

A number of implements of palæolithic type is noted. Some of them were obtained in the gravels of the Sourkka river on which the city of Gwalior stands, and others were obtained from the surface.

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488 **T. T. N.** CR, CIX, pp 45–53, 1899

The antiquities of the Kurnool district.

A mention is made of the occurrence of tumuli, dolmens, etc., in the district.

489 **Taylor, M.** JRASBom., III, pp 179–196, 1851

(1) Ancient remains at the village of Jiwarji near Ferozabad on the Bhima.

The antiquities found in the area include cromlechs kistvaens or closed cromlechs, cairns and barrows. The kistvaens all contain earthen urns filled up with human ashes and bones mixed up with charcoal. One of the monoliths of the kistvaens has a circular aperture. A few of the cairns were excavated and the remains include different types of pottery, human skeletons, pieces of iron, etc.

490 ——— JRASBom., IV, pp 380–429, 1853

(2) Notices of cromlechs, cairns, and other ancient Scytho-Druidical remains in the Principality of Sorapur.

The author describes a large number of cromlechs, kistvaens, cairns, etc., with their contents obtained from Sorapur and many other places in Southern India and is of opinion that these relics are evidence of the existence of a people belonging to the same race as that of the Celtic-Scythians.

491 ——— PRIA, X, pp 60–64, 1870

(3) Description of contents of a cairn at Hyat Nugger, in the Dekhan.

The contents of the cairn include iron weapons of different types, a bronze article (possibly a cover), shells, necklaces of shells, different types of pottery, human bones and skeletons of other animals.

492 ——— TRIA, XXIV, Antiquities, pp 329–362, 1873

(4) Descriptions of cairns, cromlechs, kistvaens, and other Celtic, Druidical or Scythian monuments in the Dekhan.

Cromlechs, kistvaens, cairns, etc., found in the principality of Shorapur and the neighbourhood (e.g. Districts of Raichur and Bellary) are described. Some of these were opened and the finds include human skeletons in different positions, earthen vessels, cists, urns, iron, copper, and bronze articles, and according to the author 'the discoveries in Shorapur and elsewhere may be classed as follows :—

1st. Cromlechs or open monuments, with and without circles of stones, containing no remains.

2nd. Kistvaens with and without circular perforations in a side slab, and with and without covering slabs, containing human ashes, bones and broken pottery.

3rd. Cairns and barrows, with single, double and treble circle of rocks and stones, containing cists and skeletons, with

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traces of human sacrifices, pottery, arrows, etc., others with cinerary urns interred in them without cists.

4th. Rock temples with circles of stones round them.

5th. Lines of rocks, placed to mark boundaries for cairns.

6th. Square and diagonal platforms of rocks in closing cairns.

7th. The great parallelograms and places of cremation at Shahpoor.'

The author further concludes 'that the ancient people to whom the remains belong were divided into two sects; one of which buried their dead, with attendant sacrifices, in cairns, the other buried their dead, without sacrifices, and interred their ashes, collected in urns, in kistvaens and cairns'.

493 ——— TRIA, XXIV, Antiquities, pp 363–369, 1873

(5) Results of examination of a group of ancient cairns on Twizell Moor, in Northumberland, exhibiting similarity in construction and contents with cairns in the Dekhan.

The cairns of Northumberland are described and their similarity with the Deccan cairns regarding their orientation, shape, diameter, form, contents, etc., is noted while it is also, pointed out that as in the Deccan there were two sections of people one of whom buried and the other burnt their dead, similar two types are found on the Twizell Moor also, but 'whereas in the Dekhan the cists were buried below the surface, at depths varying from 10 to 15 feet, formed with stones and earth, those on Twizell Moor were upon the natural surface of the ground, and were covered with loose stones and earth to a height of from 10 to 12 feet above it'.

494 **Tayler**, W. MJLS, XIV, pt 2, pp 78–97, 1847

On supposed early Celtic or Scythian vestiges, remaining in various parts of the Carnatic.

Traditions regarding the origin of the South Indian subterranean dwellings (Pantu Kurzical) are narrated, and their diversified types together with their contents are pointed out. Many of these ancient remains are not cromlechs, but are very much allied to the *Punjabi Topes*.

495 **Theobald**, W. MGSI, II, pp 279–298, 1860

(1) On the Tertiary and alluvial deposits of the central portion of the Nerbuda valley.

An account of the deposits together with a short notice of the fossils (vertebrate and invertebrate) found therein.

496 ——— PASB, XXXI, pp 323–327, 1862

(2) Celts found in Bundelkhand and chert implements from the Andamans.

A number of celts found in Bundelkhand is described. Very few of them appear to have been used with handles. They are chiefly of the neolithic type. A number of chert implements from the Andaman islands is also referred to. The

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implements were all used with the fingers in dividing fish or flesh.

497 ——— PASB, pp 125–127, 1865

(3) Note on the occurrence of celts in British Burma.

A very short note is published.

498 ——— PASB, pp 181–186, 1869

(4) Notes on the stone implements of Burma.

A description of some stone implements found in Burma is recorded. They are all polished. A summary of the Burman popular notion regarding the origin of the implements is given. A brass celt from the neighbourhood of Moulmein is described, but it is supposed to be of doubtful authenticity. An incidental reference is made to the find of a roughly-shaped stone spindle-whorl near Jubbulpur.

499 ——— PASB, pp 220–222, 1870

(5) A stone implement from Prome.

The stone implement has the peculiarity of the Burmese celt as its cutting edge is formed by grinding down only one side.

500 ——— MGSI, X, pp 189–359, 1873

(6) On the Geology of Pegu.

The author in an appendix (pp. 355–359) gives an account of the peculiar type of stone implements found in Burma. These implements are of the shouldered type and are locally known as 'Mo-jio' (thunder-chain or thunder-bolt) and supposed to have quite a number of 'occult virtues'.

501 ——— RGSI, VI, pp 54–57, 1873

(7) The shells of the ossiferous deposits (in which a celt was found by Mr. Hacket).

The most numerous and characteristic shells belong to the genus *Unio*. No molluscan species which is not now living in the locality occurs in the deposits. A few forms of *Unio* are recorded which are now represented by similar individuals.

502 ——— RGSI, VII, pp 142–145, 1874

(8) Remarks on certain considerations adduced by Falconer in support of the antiquity of the Human Race in India.

The author refers to two articles of Falconer and gives reasons for not agreeing with certain opinions formulated in them.

503 ——— PASB, pp 102–103, 1875

(9) Remarks on the communication of Mr. E. Lockwood.

It was suggested that the objects described as implements might have been portions of the upper stones of hand mills.

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504 ——— RGSI, XIII, p 176, 1880

(10) On the discovery of a celt of Palæolithic type in the Punjab.

The celt is of limestone and was found in a village on the Indus, at a distance of 25 miles below Attock in a south-western direction.

505 **Tucker, C.** PASB, XVI, pt 1, pp 376–377, 1847

A letter forwarding a box of shells and bones presented to the Asiatic Society of Bengal.

Circumstances of the discovery of a pit filled up with shells, deers' horns and other types of bones are described. The pit occurs at a place Umhut on an affluent of the Gogra the two meeting at a place called Gopalpore. Reference is made to the local opinions prevalent regarding the occurrence of the remains in the pit.

506 **Turner, H. G.** IA, VIII, p 207, 1879

Cromlechs.

A number of cromlechs on the slopes of the Anamalies is noted. According to the local traditions, they were built by men in those days when fire-rains were common.

507 **Twemlow, G.** GM, IV, pp 43–44, 1867

Flint cores from the Indus.

A section of the place where the cores were found is described.

508 **Vanstavern, T.** IA, IV, pp 305–306, 1875

Notes on the antiquities found in parts of the Upper Godavari and Krishna districts.

Scythian tombs without cairns are recorded from the Upper Godavari with contents of small earthen pots filled up with burnt bones, clay beads, etc.

509 **Vats, M. S.** ARASI for 1923–1924, pp 51–52, 1926

Exploration, Sind, Mahen-jo-daro.

The antiquities include a large number of chert implements.

510 **Verechere, A. M.** JASB, XXXVI, pt II, p 114, 1867

(1) Kashmir, the Western Himalayan and the Afghan Mountains.

Attention is drawn to the number of erratic blocks found at places with cup-like holes on them. According to the author, they are of glacial origin rather than due to human agency.

511 ——— PASB, p 58, 1870

(2) Remarks on the paper by H. Rivett-Carnac. (See No. 1.)

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Attention is drawn to a paper previously published by himself and the opinion is expressed that the holes referred to in that paper might as well have been executed by men.

512 Verdenburg, E. RGSI, XXXIII, pp 33–45, 1906

(1) Pleistocene movement as indicated by irregularities of gradient of the Nerbuda and other rivers in the Indian Peninsula.

In this paper the author has thrown out a suggestion that the implements found in the Nerbuda and the Godavari alluvium may have been derived from the unconformably overlying newer alluvia. (p. 34).

513 ——— JASBom., XI, pp 673–674, 1919

(2) Note on Dr. Keith's paper 'Report on two human crania of considerable but uncertain antiquity'.

The Sialkot skull is not of much geological interest. The Bayana skull, however, is not recent but it is difficult to say anything definitely regarding its antiquity.

514 Vines, T. H. M, XXII, pp 47–48, 1922

India : Archæology.

In this paper the author points out the parallelism of the conditions between the flint-implement-bearing places in Fgypt and in the North Indus Valley.

515 W. E. W. IA, V, p 160, 1876

A Query-extinct race.

The article refers to a passage in the writings of Col. Welsh in which allusion was made to an extinct race, the Paundway or Pandwah, living apparently near Arcot.

516 Wakefield, G. E. C. ARADN for 1918–1919, pp 24–29, 1920

Note on a visit to the prehistoric burial-grounds of Janampett in the Paloncha Taluka of the Warangal district of His Exalted Highness the Nizam's Dominions.

A somewhat detailed description of a cromlech is given. Contents are all fragments of pottery, a few bones and portions of some iron implements.

517 Walhouse, M. J. IA, II, pp 275–278, 1873

(1) On some formerly existing antiquities on the Nilgiris.

The author describes a few antiquities found near Nidi Mand, between Kunnur and Katari and near Ralliyar. A five-celled open-sided dolmen meant for a rude temple was found in the neighbourhood of Nidi Mand, while in a stone circle in the second locality mentioned above, a large number of iron implements embedded in a thick layer of charcoal was discovered. A cairn of the Nilgiri type was discovered near Ralliyar. The cairn contents included some pieces of a large urn and a human hand.

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518 ———— IA, III, pp 33–36, 1874

(2) Archæological reminiscences.

A general account is given of the dolmens, etc., found on the mountain ranges of Southern India, specially on the lower slopes of the Anaimalai range.

519 ———— IA, III, pp 276–277, 1874

(3) Etruscans and Indians.

Attention is drawn to the great resemblance that exists between the dolmens of the Etrurian group and those of Central and Southern India.

520 ———— IA, III, pp 277–278, 1874

(4) Holed dolmens.

The author suggests that the aperture in the dolmens might have been for the purpose of introducing incense.

521 ———— IA, IV, p 302, 1875

(5) Bronze antiquities in India.

The discovery of a few bronze articles, *i.e.*, jug, oil vessel and stand for wick is recorded from the Coimbatore district. The jug is not of a type found among the Hindus and it is suggested that it might have been imported by the Greek and the Phœnician sailors.

522 ———— IA, IV, pp 12–13, 1875

(6) Miniature and prehistoric pottery.

Attention is drawn to the occurrence of pottery of small size in huge megalithic structures and the different theories proposed for this prehistoric pottery are discussed.

523 ———— JRAS, NS, VII, pp 17–34, 1875

(7) Notes on the megalithic monuments of the Coimbatore district, Madras.

A number of tumuli is described. According to the local traditions, these structures were the dwelling places of a pigmy race. The contents of the tumuli include pottery of a very fine type, urns containing generally fragments of burnt human bones, implements of iron, beads of gems pierced through, etc. The slab in the eastern side has an aperture which is usually circular but sometimes nearly square. The position of the aperture is, however, not invariably fixed. It is not impossible that the apertures were meant for introducing fresh urns or bodies of children. According to the author, the tumuli are the relics of a shephard race known as the Kurumbars who were a settled people and not nomadic. The Southern and the Central Megalithic monuments are compared. They are supposed to be the relics of a race of people who originally came from the steppes of Central Asia. Attention is further drawn to the peculiar sepulchres, known as Topikals, consisting of huge urns buried in the ground with no cist or chamber.

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524 ——— IA, V, pp 255–256, 1876

(8) Remarks on the communications of Mr. J. H. Garstin and E. W. W. respecting dolmens and extinct races.

In this paper attention is drawn to the peculiar custom of interment in earthen-ware coffin identical in shape, dimensions and material, as found in India, Assyria and Italy and to the similarity that exists between the kistvaens, cromlechs, dolmens, and stone-circles found in Palestine and the Sinaitic Peninsula on the one hand and the megaliths of Southern India. A summary of the popular legends to account for the origin of the dolmens, etc. is also recorded.

525 ——— JAI, VI, pp 245–246, 1877

(9) Exhibition of iron arrow- and spear-heads from Southern India.

The objects are used chiefly by the hill-tribes of Southern India, the Nilghiris, the Palni hills and the Western Ghats.

526 ——— IA, VII; p 234, 1878

(10) Ancient burying ground at Mungapetta and crosses.

A prehistoric burial place near Mungapetta (Nizam's Dominions) is described. Four large monoliths in the shape of crosses have been found associated with this burial place which has been ascribed to a pre-Aryan age or Hindu-Kolarian times. A cross similar to this is reported from Hazaribagh.

527 ——— IA, VII, p 182, 1878

(11) Contracted burials.

Attention is drawn to the system of contracted burials found in the British and the German prehistoric graves. These burials may be compared with the form of contracted burials found among the Abors.

528 ——— JAI, VII, pp 21–43, 1878

(12) On non-sepulchral rude stone monuments.

A general paper on the subject containing a few references to the non-sepulchral rude stone monuments found in different parts of India, specially Southern India.

529 ——— IA, VII, pp 44–47, 1878

(13) Sepulchral customs, existing and prehistoric.

The author draws attention to certain customs prevalent among some of the races of India which may throw some light on the customs prevalent in the prehistoric days.

530 ——— IA, VII, pp 176–179, 1878

(14) Trojan and Indian prehistoric pottery, and the Swastika symbol.

Attention is drawn to the great similarity existing between the potteries excavated at Hissarlik, the supposed site of old

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Troy, and those found chiefly from Southern India. The resemblance is not only a general one, but the legged potteries and burial jars found in parts of Southern India, appear to have got their representatives among the antiquities at Hissarlik. The author further drew attention to the *Swastika* symbol found in different parts of the world and gives an account of the theories propounded to explain this occurrence.

531 ———— IA, VIII, pp 164–167, 1879

(15) Some non-sepulchral rude stone monuments in India, Persia, and Western Asia.

A few rude stone monuments are mentioned which are not sepulchral. Reference is also made to four cromlechs in Coorg the appearance of which suggests that they are altars.

532 ———— JAI, XI, pp 415–423, 1882

(16) Some vestiges of girl sacrifices, jar-burial, and contracted interments in India and the East.

The author describes instances of jar-burials in South India in which huge pear-shaped urns filled up with earth, small broken bones, some bits of iron, and, occasionally, a small urn containing bits of bone are buried in the ground and covered with slabs of granite. Tradition connects these jar-burials with the sacrifices of virgins. Attention is also drawn to the contracted burials prevalent among the Abors at present.

533 **Walker, J. T.** PASB, p 151, 1868

Notes on the paper of J. Mulheran (see No. 2).

It has been suggested that possibly the cromlechs are of Buddhist origin and the crosses are the relics of a small community of Christian converts and missionaries.

534 **Walsh, E. H. C.** JASB, LXXIII, pt III, pp 20–24, 1904

A note on stone implements found in the Darjeeling district.

A few neolithic implements are described.

535 **Walters, H.** AJ, XXVIII, pp 321–323, 1829

(1) An account of a visit to the highlands of Pundua and to the great cave of Buban.

The paper contains a short note regarding the Khasia stone monuments.

536 ———— AR, XVII, pp 499–512, 1832

(2) Journey across the Pandua hills, near Silhet in Bengal.

A short account of the Khasia monumental stones is given and their resemblance with Stonehenge is pointed out.

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537 Ward, B. S. MJLS, VI, pp 280–294, 1837

Memoir descriptive of the Vurragherry and Kunnundaven Mountains.

Reference has been made to the remains known as the Pandy Coolys and it has been remarked that 'it is impossible to obtain any correct account of their origin'.

538 Ware, H. PRIA, I, pp 151–154, 1838

A cromlech near Bombay, in India.

A short notice of a cromlech near Belgaum is recorded.

539 Watson, J. W. IA, III, pp 53–54, 1874

A rude stone monument in Gujarat.

A megalithic structure, identified as a kistvaen, is noted and its antiquity discussed. The monument is locally known as the *Mandero*.

540 Wayland, E. J. SZ, XI, pp 85–125, 1919

Outlines of the stone ages of Ceylon.

According to the author, the Veddas are not autochthonous in the island, but the earliest man of Ceylon with a pre-palæolithic culture reached the island from India in the Pleistocene time and, later on, attained the palæolithic cultural stage in the island. At the same time, due to the climatic conditions, the rivers were in high floods and the palæoliths were buried under the alluvial deposits. The climatic conditions changed gradually and the neolithic man came in, who was followed by the Veddas, the Naga people and the Sinhalese.

541 Welsh, J. Vol. II, pp i–vii, 1–347, 1830

Military reminiscences. (Second edition.)

Reference is made to the remains of a stone-house, Pandawar's house, in Arcot the entrance to which is by means of a small circular passage in the wall. Attention is drawn to the close affinity between houses like this and the sepulchres found on the Malabar coast.

542 Williams, T. AR, XVII, p 624, 1832

(13 copper weapons found in the earth near Futtehgerh. *Presented to the Asiatic Society's Museum*).

543 Wilson, T. Rep. U.S. Nat. Mus., pp 455–460, 1893

Minute stone implements from India.

A number of minute implements is figured and described. They were all obtained from the Vindyan hills and belong to the neolithic period, but, from their association with a few palæoliths, their discoverer, Mr. Carlyle attributed 'mezolithic' age to them. According to the author 'The whole series bears the same impress. The similarity of form and mode of

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manufacture and their being found in the same general locality, is evidence showing the same intention on the part of the makers, although we are quite in the dark as to what that intention was'.

544 Wilson, W. L. PASB, pp 136–153, 1867

Stone implements found in India.

See W. T. Blanford (No. 3).

545 Wood-Mason, J. JASB, LVII, pt II, pp 387–396, 1888

(1) Notes on some objects from a neolithic settlement recently discovered by Mr. W. H. P. Driver at Ranchi in the Chota Nagpur district.

A detailed description of the implements is recorded.

546 ——— JASB, LVIII, pt II, p 254, 1889

(2) Notice of a neolithic celt from Jashpur in the Chota Nagpur district.

The note contains a short description of the implement.

547 Woodward, H. GM, III, pp 93–94, 1866

The early appearance of man in the East.

There is a reference to Wynne's discovery of worked agates in the Upper Valley of the Godavari associated with fossil bones.

548 Wynne, A. B. GM, III, pp 283–284, 1866

Remains of prehistoric man in Central India.

A description of the Moongee find is given.

549 Yazdani, G. ARADN for 1915–1916, pp 6–10, 1917

(1) Excavation.

Excavations near Mauta Ali are dealt with. The remains are divided into two groups—Northern and Western—which are cairns and cromlechs respectively. The cairns with their contents of pottery and iron-implements are described. The pots bear some marks on them seemingly scratched with a sharp-pointed instrument and resembling some Pali characters.

550 ——— JHAS for 1917, pp 56–79, 1917

(2) Megalithic remains of the Deccan—A new feature of them.

The megalithic remains at Raigarh (Nalgonda district) are described. Three human skulls and a highly polished pottery (red and black) with some peculiar marks on them were found. 'Seven of them (marks) are identical with letters of the Bhattiprolu inscriptions ..... and a close examination of them leads one to surmise that they are like the Egyptian hieroglyphs and have been used sometimes as ideographs to express ideas and sometimes phonetically to represent syllables or letters'.

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The author draws attention to the great resemblance existing between the megalithic remains of Etruria and Southern India and further points out that several marks on the pottery are identical with the characters of the Etruscan script.

551 ———— ARADN for 1916–1917, pp 5–8, 1918

(3) Excavation.

From a study of the marks on pottery, the author is led to believe that the South Indian cairn-builders had some sort of connection, cultural or otherwise, with the Eur-African Mediterranean race of Sergi.

552 ———— ARADN for 1917–1918, pp 12–13, 1919

(4) Excavations.

A short note on a few cromlechs in the Paloncha taluk is given and attention is drawn to the resemblance existing between them and the cromlechs found in Africa and Europe.

553 Yule, H. JASB, XIII, pp 612–631, 1844

Notes on the Kasia hills, and people.

This paper includes, among other topics, some informations regarding the monumental stones of several kinds.

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Some Observations on the Burrowing Toad, *Cacopus globulosus* Günther.

By D. D. Mukerji.

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Since Günther's discovery of the species *Cacopus globulosus*, in 1864, till to-day nothing is practically known as to the habits and development of this remarkable burrowing toad. This is chiefly, if not entirely, due to the fact that owing to its fossorial mode of life the species is very rarely met with and in fact only ten specimens including the present find recorded herein have so far been reported from India and Ceylon.

In the collection of the British Museum (Nat. Hist.) there are preserved four specimens of *C. globulosus* of which two are types collected by Dr. Trail, from Russelconda in the Madras Presidency, while the other two are also from the same locality collected by Col. Beddome. Some years before 1871, Dr. J. Anderson collected and reported one adult female from the Botanical Gardens, near Calcutta. Subsequently in the same year he procured another adult female from Berar in the Central Provinces. The seventh specimen (sex not mentioned) on record was collected by Mr. E. E. Green from Maha Illuppallama in Ceylon and reported on by Dr. Joseph Pearson. The eighth one is again an adult female collected from the type-locality and preserved in the Government Museum, Madras.

Besides Dr. Anderson's two specimens that are preserved in the collections of the Zoological Survey of India, there is another young specimen labelled as *C. globulosus* (No. 2749), but unfortunately without any history.

In November, 1928, an adult female of the species was collected by my brother Mr. Raj Raj Mukerji, M.Sc., from Khardah, a village in the northern suburb of Calcutta. This is the second report of *C. globulosus* from Bengal and in view of the rarity of the species, I take the opportunity to record this find and make a few observations on the animal.

In addition to a short morphological note given below I intend briefly to describe the mode of its digging earth with the help of the well-developed metatarsal shovels, and also the behaviour of the animal in captivity with special reference to the nature and period of fasting. I have thought it desirable to illustrate my note with photographs of the specimen from life.

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The specimen under report was dug out, in the course of excavating a tank, from a depth of about 8 feet, the soil thereat being more or less sandy. I have carefully examined the toad and compared it with Anderson's specimens as well as with the one from the type-locality preserved in the Government Museum, Madras,[1] and have no hesitation in assigning the specimen in question to *Cacopus globulosus* Günther.

The specimen is 47 mm. long from snout to vent and when fully distended assumes a more or less spherical shape. It is robust and has short but well-developed muscular limbs. The eyes are half as small as they are in *C. systoma*, the only other known species of the genus.[2] Normally the skin is loose and smooth with several prominent folds on the head, behind the posterior margin of the eyes, on the neck and along the upper extremities of the fore and hind limbs (fig. 1). But these folds disappear except the one behind the eyes, whenever the toad becomes fully distended (fig. 2). Faint granules and profuse slimy secretion appear on the body, specially on the dorsum, when the animal is subjected to open air and light for a considerable length of time.

The natural colour is dull greenish grey above and dirty white below with some whitish spots scattered irregularly on the body. None of the specimens that I have examined show any individual or local variation, except for the colour which is much darker in the specimen under report and in the young specimen referred to above (No. 2749).

In the laboratory the toad was kept in a fairly large wooden box with wire-netting on the top and with a side door similarly netted. The box had been filled with sandy earth, about 8 inches deep, and was kept in a cool place. The earth in the box was damped regularly with water every seventh day. This seemed to be essential for the life of the animal, for, it was definitely observed that the toad would become markedly reduced, dry-skinned and weakened whenever subjected to

---

[1] Through the kindness of Dr. Baini Prashad I have had the opportunity of examining the specimen. My grateful thanks are due to him.

[2] Boulenger distinguishes the two species, *viz. C. systoma* and *C. globulosus* on the relative proportions of the diameters of the eyes and the lengths of the snouts which are about one and two diameters respectively. In the description of *C. globulosus* he mentions that it differs from the preceding in the following points: 'Habit stouter still, globular, snout longer, measuring nearly twice the diameter of the orbit', etc. In the original description of *C. globulosus* Günther also observes that the 'snout is short but considerably longer than in *C. systoma*'. Unfortunately, both the statements 'longer' and 'considerably longer' are ambiguous, if not inaccurate. For, as a result of my examination of a large number of *C. systoma* and five specimens of *C. globulosus* preserved in the Zoological Survey and elsewhere I find that in equal-sized specimens of the two species the snouts are almost of equal length. The eyes are considerably smaller in *C. globulosus*, but the snout is not longer than that of *C. systoma*.

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a surrounding of considerably dried up soil for a few days. On the soil being watered, the toad would readily regain its healthy tone and become lively to all appearance within a couple of hours. This shows that the toad absorbs moisture mainly from the damp soil under which it lives, and in nature during winter and dry months, at any rate, the animal probably lives at a considerable depth where the subsoil is damp and cool.

Left to itself on the surface of the soil in the experimental cage the toad would squat quietly for some time, crawl about a little and then begin to dig up earth by the alternate quick outward and upward propelling movements of the two hind limbs. The metatarsal shovels, which have fairly sharp outer edges do all the cutting and scraping of earth, while the digits of the hind limbs that are slightly webbed at their bases sweep away earth on the sides of the burrow. By a forward push on the soil in front by the fore limbs, the animal gradually forces its way backwards and downwards in the burrow. This operation continues with intermission until finally the toad reaches the bottom, where it would rest quietly and would never come up on the top of the soil of its own accord except when the soil is too dry.

It has been observed that these toads are voracious eaters and feed chiefly on ants and white-ants (termites).[1] But unfortunately I could not induce my captive in any way to feed on white-ants which I used to offer it daily. The toad never lapped up a single termite, either inside the experimental cage or outside in a quiet corner of the room. It never showed the least inclination to take food and appeared to be equally passive during day and night. Counting from the day of its captivity the toad fasted for 390 days and ultimately reached the point of death. For nearly 275 days it stood captivity pretty well and did not suffer appreciably from persistent fasting; that is, it maintained more or less steady physical conditions, but subsequently it began to become emaciated and became weaker and weaker till it died. I presume the death was due to starvation.

It is a well-known fact that the Reptiles and Batrachians can stand prolonged captivity and fasting. But the chief point of interest in regard to the fasting of my toad is that it preferred to fast absolutely for 390 days and finally to die, rather than to feed on termites that used to be placed at its disposal. Should one suspect it to have been deliberate fasting?[2]

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[1] The specimen of *C. globulosus* preserved in the Government Museum, Madras, contains a large number of winged termites in its stomach.

[2] Hans Gadow (*Cambridge Nat. Hist.*, VIII, *Amphibia and Reptiles*, p. 347, 1901) observes that 'one of my largest *Chrysemys concinna* fasted deliberately for eight months, refusing worms, insects, meat, frogs

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The most remarkable feature of the two toads, *viz.* *C. systoma* and *C. globulosus*, that has been noted by several observers is the rotund or globular shape of the body. In *C. globulosus* this character, as the name indicates, is greatly exaggerated and is accounted for in various ways by Günther (6), Thurston (9) and Pearson (8). Devanesen (5) has, however, discussed the different views in detail and has published an emended view. I need only point out that the globular shape in *Cacopus* is due chiefly to the distention of the abdominal cavity caused by the inflation of the lungs which are capable of swelling up dorsalwards in the form of pouches on the two sides of the back (fig. 3). Further, the distention of the abdominal cavity is more or less a common phenomenon in frogs and toads under various circumstances. It is occasional and should not, therefore, be considered to be a permanent feature. As a matter of fact, *C. globulosus* may maintain the distended or inflated condition for a considerable time, and this is followed by a slow and gradual fall in the degree of distention which succeeds each well-inflated stage, until ultimately the toad assumes a perfectly normal form. It is quite possible, mechanically, to reduce a fully expanded condition to a normal stage by very slowly compressing the body of the toad latero-dorsally. It is obvious, that by doing this the extra amount of air stored in the lungs by the toad is forced out and hence there is a proportionate fall in the distention of the abdominal cavity.

I record here my indebtedness to Lt.-Col. R. B. Seymour Sewell, Director of the Zoological Survey of India, for kindly going through my manuscript, and making useful suggestions.

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only occasionally sniffing at the food, until it was tempted with whitebait, which it took greedily'.

Recently, K. K. Nayar (*Journ. Bombay Nat. Hist. Soc.*, XXXV, pp. 220–224, 1931) reports the capture of a specimen of *Rhacophorus malabaricus* Jerdon at Ernakulum in Cochin State. The specimen was kept in confinement for nearly three weeks. During the whole period of confinement it consistently refused to take any food; though dragon-flies and other insects were supplied to it at different times.

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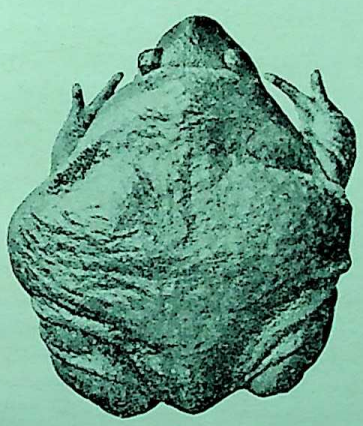

2.

3.

FIG. 1. Side view of *Cacopus globulosus* from life, showing prominent folds in non-distended condition.

FIG. 2. Dorsal view of *C. globulosus* in distended condition.

FIG. 3. Dorsal view (skin removed) of *C. systoma* showing the inflation of the left lung.

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Observation on the Course of the Facial Vein and the Formation of the External Jugular Vein in some Indian Frogs and Toads.

By J. L. Bhaduri.

(*Published with the permission of the Director, Zoological Survey of India.*)

Introduction.

In the last Calcutta Session of the Indian Science Congress[1] I communicated briefly the results of my studies on the course of the facial vein and the formation of the external jugular vein in *Bufo melanostictus* and *Rana tigrina*. I then pointed out that in the former species there is a connection between the facial vein and the internal mandibular vein, while in the latter, unlike the condition hitherto described in Ranid frogs, the facial vein divides into two, one continuing as the cutaneous vein, the other joining the internal mandibular vein. Since then I have extended my observations to other Indian frogs and toads and the results of my observations are given below.

Gruby (6) was the first to give a moderately detailed account of the venous system of a frog and he showed that the facial vein continues as the cutaneous vein. In his revision of Ecker und Wiederscheim's '*Anatomie des Frosches*' Gaupp (2) treated the venous system in greater detail than that given in any previously published account, and it must be admitted by all students of anatomy that he has provided us with the most thorough and authoritative account of the vascular system of the frog. He has clearly stated, as already observed by Gruby (6), that the facial vein continues beyond the head region as the cutaneous vein. His description is, however, based chiefly on *Rana esculenta*, but in other frogs of the genus *Rana* treated in text books a similar condition of the facial vein is described.

Marriner (8), however, in describing the anatomy of *Hyla aurea* observed for the first time a connection of the facial vein with the internal mandibular vein; but he did not mention particularly which vein returns blood from the upper jaw and joins with the internal mandibular vein. The precaval

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[1] *Proc. Ind. Sci. Congress*, 15th Session, 1928, p. 198.

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system of an Australian tree-frog *H. cærulea* has also been described by Gillies (4) who notes that the external jugular vein is formed by the internal jugular vein and the "mandibular, which comes from the lower jaw and into which, near the suspensorium, runs the maxillary vein from the upper jaw". He has, however, fallen into the error of considering the facial vein as a maxillary vein both in his text and in his figure. In this paper he has described the precaval system in a most general way but it is surprising to note that his exposition of facts does not agree at all with the descriptions of other examples of Anurans nor even with its congener *H. aurea* described by Marriner (8). This can further be seen by a reference to his table (*loc. cit.*, p. 67) where he compares the precaval systems of the two species. The differences which he has established for *H. cærulea* are so marked and wide that I feel justified in suggesting a re-examination of his material.

I am indebted to Lt.-Col. R. B. Seymour Sewell, Director, Zoological Survey of India, for kindly going through this paper. I am also indebted to Dr. S. L. Hora, Officiating Superintendent, Zoological Survey of India, for giving me much encouragement during the progress of the work and many helpful suggestions in the preparation of the manuscript.

Material and Method.

The material for this investigation was mainly collected by me, but for the opportunity of examining specimens of *Cacopus systoma*, a very interesting toad, I am indebted to Mr. Ram Chandra Rao who brought them for me from Mysore. The three specimens which he very kindly placed at my disposal were in a very good state of preservation. The Anurans examined are enumerated below:—

(1) *Bufo melanostictus.*
(2) *B. stomaticus.*
(3) *Cacopus systoma.*
(4) *Hyla annectens.*
(5) *Rana tigrina.*
(6) *Rana cyanophlyctis.*
(7) *R. limnocharis.*
(8) *R. hexadactyla.*
(9) *R. crassa.*
(10) *R. afghana.*

I have studied the veins in the commonest Indian toad *Bufo melanostictus* as a basis of comparison with the other frogs and toads. With the exception of *Cacopus* the material was examined in a fresh condition. The injection fluid, as recommended by Parker and Parker (10) was tried in several instances and gave good results.

As to the nomenclature of the various veins, I have adopted those used in text books following Gaupp's classical work (2) but where such was found to be unsuitable for the purpose of correct description a new name has been suggested.

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Description of anterior veins in *Bufo melanostictus*.

Bufo melanostictus is the commonest toad in India and as such it is used for dissection as one of the Anuran types in several Indian Universities. Any special features, therefore, are of considerable importance and should be put on record.[1] The two precavals are similar in origin and as there is no difference between them it is only necessary to describe one of them in detail. I have followed here the usual plan of description by commencing with the smallest vessels and working gradually through the larger trunks to the heart (Figs. 1, 2 and 3).

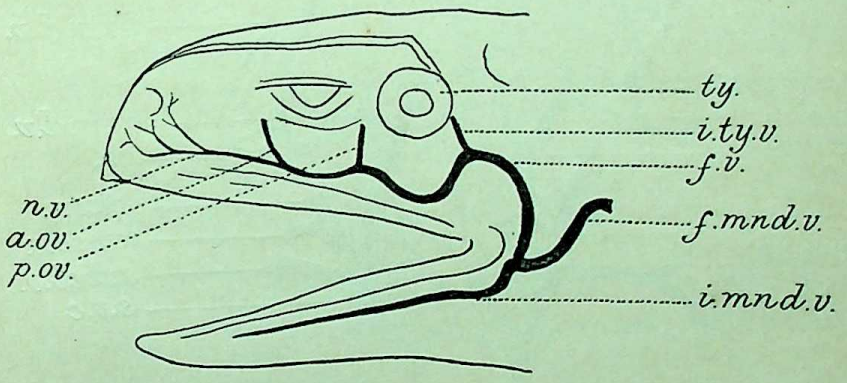

Fig. 1. Diagrammatic lateral view to show the course of the facial vein in *Bufo melanostictus*.

a.o.v.–anterior orbital vein; *f.mnd.v.*–facio-mandibular vein; *f.v.*–facial vein; *i.mnd.v.*–internal mandibular vein; *i.ty.v.*–infratympannal vein; *n.v.*–nasal vein; *p.o.v.*–posterior orbital vein; *ty.*–tympanum.

The *nasal vein* (*n.v.*) takes its origin from the point of the snout receiving small twigs from that area. It runs backwards along the margin of the upper jaw and joins with the *anterior orbital vein* (*a.o.v.*) from the anterior inner angle of the orbit to form the beginning of the *facial vein* (*f.v.*). The facial vein after running backwards for a very short distance receives the *posterior orbital vein* (*p.o.v.*) from the posterior angle of the orbit. It then runs towards the angle of the jaw, and, unlike the condition in frogs, it passes below the depressor maxillæ muscle receiving the *infratympannal vein* (*i.ty.v.*). Lying below the muscle it curves sharply round the angle of the jaw to open finally into the *internal mandibular vein* (*i.mnd.v.*). Although the union is superficially hidden by much fatty tissue, it can be demonstrated by slightly teasing this

[1] An account of the arterial system of this toad has been published by the author in *Journ. Proc. Asiat. Soc. Bengal* (n.s.) XXV, 1929, pp. 301–315.

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tissue. The *internal mandibular vein* (*i.mnd.v.*) arises as usual from the anterior part of the lower jaw and passes along the inner margin of the same receiving *en route* small branches from the muscles of the throat. It may, however, be noted in this connection that the mandibular veins of each side are connected anteriorly just below the submentalis muscle by a

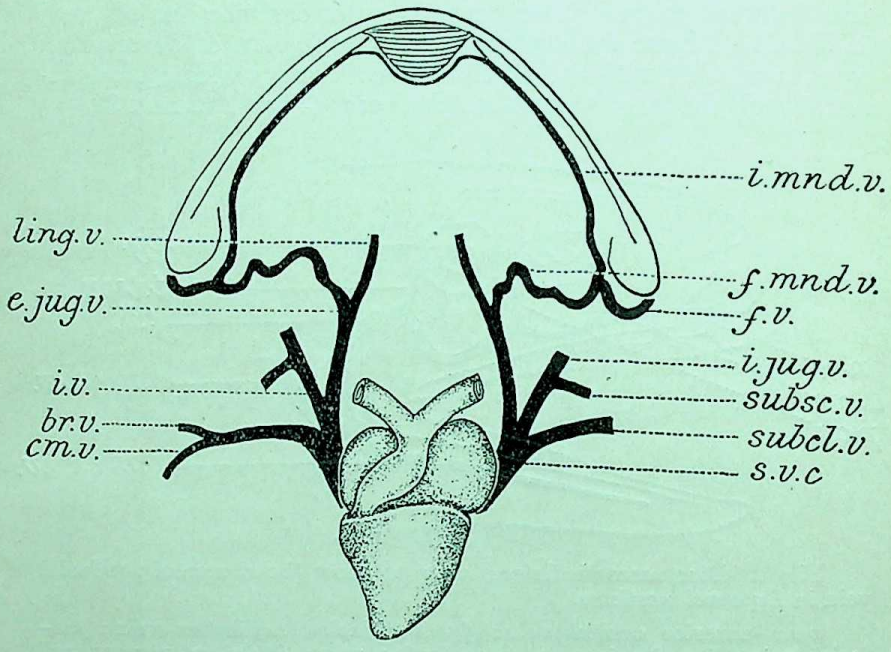

Fig. 2. Drawn from the ventral aspect to show the general arrangement of the anterior veins in *Bufo melanostictus*.

br.v.–brachial vein; *cm.v.*–musculo-cutaneous vein; *e.jug.v.*–external jugular vein; *f.mnd.v.*–facio-mandibular vein; *f.v.*–facial vein; *i.jug.v.*–internal jugular vein; *i.mnd.v.*–internal mandibular vein; *i.v.*–innominate vein; *ling. v.*–lingual vein; *subcl.v.*–subclavian vein; *subsc.v.*–subscapular vein: *s.v.c.*–superior vena cava.

very fine transverse semicircular venous girdle. The united trunk, formed by the union of the *facial* (*f.v.*) and the *internal mandibular* veins (*i.mnd.v.*) at the posterior part of the inner angle of the lower jaw runs in a sinuous course, receiving veins from the skin of the throat and surrounding tissues towards the posterior cornu of the hyoid apparatus where it joins the *lingual vein* (*ling.v.*). This united trunk, to distinguish it from the internal mandibular vein of the described examples of the frogs, is styled for the sake of clearness the *facio-mandibular vein* (*f.mnd.v.*). The *lingual vein* commences from the tip of the tongue and runs backwards to open into the *facio-mandibular vein* (*f.mnd.v.*), but it should be noted that the lingual veins (Fig. 3) of two sides are also confluent anteriorly at the tip

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of the tongue, the right lingual vein (*r.ling.v.*) being more gorged than the left one.[1] Thus the *external jugular vein* (*e.jug.v.*) is formed by the union of the *lingual vein* (*ling.v.*) and the *facio-mandibular vein* (*f.mnd.v.*).

The *innominate vein* (*i.v.*), as usually seen in the frogs, is made up of the *internal jugular vein* (*i.jug.v.*) and the *subscapular vein* (*subsc.v.*).

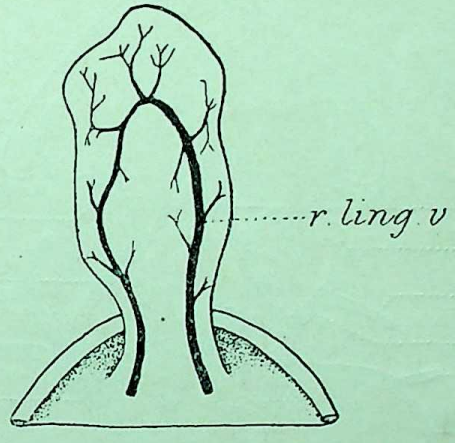

Fig. 3. Disposition of the lingual vein in *Bufo melanostictus* as seen by everting the tongue.

r.ling. v.–right lingual vein.

The *sub-clavian vein* (*subcl.v.*) also follows the same general plan of formation by the union of the *brachial vein* (*br.v.*) and the *musculo-cutaneous vein* (*cm.v.*). But it is of interest to note here that the cutaneous factor of the musculo-cutaneous vein, though fairly distributed over the skin area is not, however, observed to supply the skin beyond the fore-limb. Such a condition of the cutaneous factor was pointed out by Marriner (8) in *H. cærulea*.

The *anterior vena cava* or the *precaval* (*s.v.c.*) is formed by the union of the three great trunks, namely, the *external jugular* (*e.jug.v.*), the *innominate* (*i.v.*) and the *sub-clavian veins* (*subcl.v.*).

A similar condition of the course of the facial vein has been found by me in dissections of *Bufo stomaticus, Hyla annectens* and *Cacopus systoma*. In the latter, however, an unusual plan in the formation of the right and the left precavals has been met with and this merits a brief notice here (Fig. 4).

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1 The confluence of the lingual veins at the tip of the tongue was not observed before in any Anurans, and is thus worthy of record.

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The left *precaval* (*s.v.c.*) is formed by the three usual components, *viz.*, *external jugular* (*e.jug.v.*), *innominate* (*i.v.*) and *sub-clavian* veins (*subcl.v.*). The right *precaval*, however, as is shown in the diagram, is formed mainly of two veins, the *sub-clavian* (*subcl.v.*), and the short united trunk of the *innominate* (*i.v.*) and the *external jugular veins* (*e.jug.v.*).

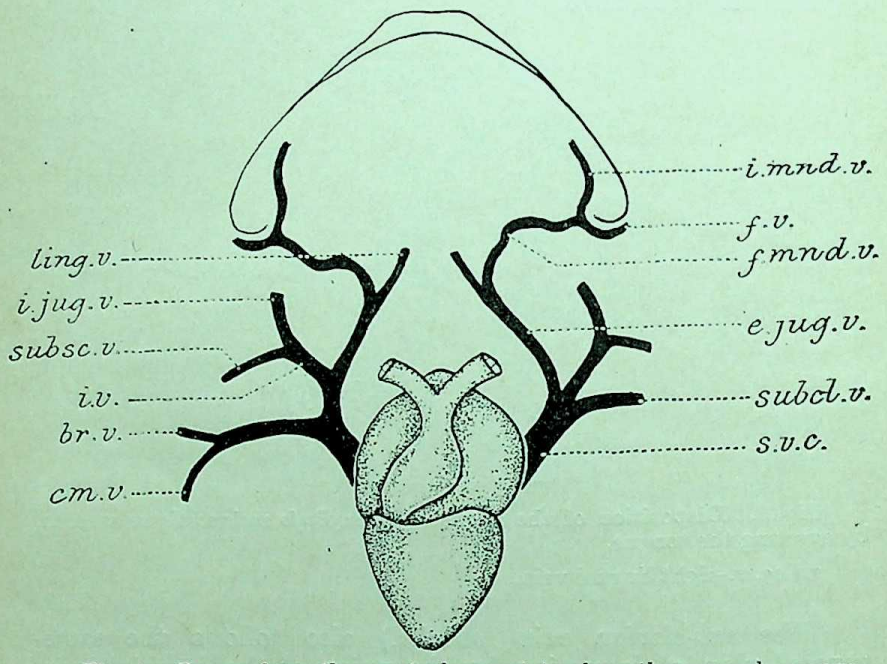

Fig 4. Drawn from the ventral aspect to show the general arrangement of the anterior veins in *Cacopus systoma*.
(Letters as in Fig. 2.)

Such an arrangement may seem at first to be an abnormal case but an examination of the two other specimens revealed an identical condition in the precaval system. This condition is rather unusual in the Amphibians, but it may, provisionally, be accepted as a normal feature in *Cacopus*, since three specimens, two males and one female, showed an exactly similar arrangement.

Description of anterior veins in *Rana tigrina*.

This is the commonest Indian frog and is used as a type dissection in the majority of Indian Universities. Its anatomy is, therefore, a matter of more than usual interest to Indian students.[1] I will, however, point out here only its chief differ-

[1] Parker and Bhatia (11) have described the anatomy of this species of frog, but they have not made any reference to the course of the facial vein or the mandibular vein.

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ences from non-Indian frogs (*Rana*) and also from the toad (*Bufo*) of which I have given a full description above with regard to the course of the facial vein (Fig. 5).

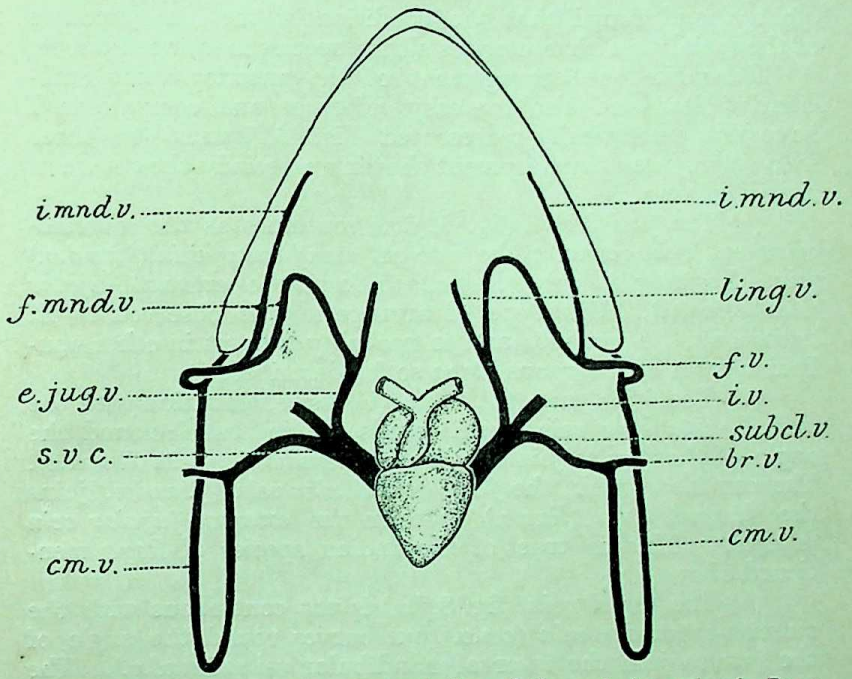

Fig. 5. Diagrammatic representation of the anterior veins in *Rana tigrina* (ventral aspect).

(Letters as in Fig. 2.)

There is no obvious difference in the formation of the *facial vein* (*f.v.*), and beyond receiving the *infratympannal vein* (*i.ty.v.*) it takes a binary course very near the angle of the jaw. One branch is continuous, as observed in other frogs, with the *cutaneous vein* (*cm.v.*), while the second curves round the angle of the jaw, as in *Bufo* described above, to open into the *internal mandibular vein* (*i.mnd.v.*). The most essential point to be noted in this connection is that the facial vein does not pass below the depressor maxillæ muscle. It is perhaps for this reason that blood can flow easily both ways. Here too the union of the facial vein and the internal mandibular vein is very much obscured by the deposit of fatty tissue. The designation of the *facio-mandibular vein* (*f.mnd.v.*) is also maintained here for that part which is formed by the confluence of the *internal mandibular vein* (*i. mnd. v.*) and the side branch of the *facial vein* (*f.v.*). A passing mention may also be made of the fact that the cutaneous factor is identically similar in its distribution to that of other frogs.

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No difference was observed in the formation of the precavals.

I have examined a few other Indian frogs, namely, *R. cyanophlyctis*, *R. limnocharis*, *R. crassa*, *R. hexadactyla* and *R. afghana* and found that the condition of the binary course of the facial vein characterises all the species mentioned above.

To make the arrangement of the anterior veins sufficiently clear and also for easy reference and comparison I have diagrammatically represented (Figs. 6, 7 and 8) the three following types of arrangement showing especially the course of the facial vein.

(1) The *facial vein* (fig. 6, *f.v.*) continues as the *musculo-cutaneous vein* (*cm.v.*); the *internal mandibular vein* (*i.mnd.v.*) joins the *lingual vein* (*ling.v.*) to form the *external jugular vein* (*e.jug.v.*). This type of arrangement is observed in *R. temporaria*, *R. esculenta* and is probably present in other non-Indian frogs of the genus *Rana* so far described.

(2) The *facial vein* (fig. 7, *f.v.*) in its continuation with the *musculo-cutaneous vein* (*cm.v.*) sends a side branch round the angle of the jaw to join the *internal mandibular vein* (*i.mnd.v*). The common trunk, the *facio-mandibular vein* (*f.mnd.v.*) joins the *lingual vein* (*ling.v.*) to form the *external jugular vein* (*e.jug.v.*). This is true of the Indian species of *Rana* mentioned above.

(3) The *facial vein* (fig. 8, *f.v.*) is not continuous with the *musculo-cutaneous vein* (*cm.v.*) but curves round the angle of the jaw to join the internal mandibular vein (*i.mnd.v.*). The *facio-mandibular vein* (*f.mnd.v.*) thus formed passes on to join the *lingual vein* (*ling.v.*) and forms the *external jugular vein* (*e.jug.v.*). This is true of *Bufo*, *Hyla* and *Cacopus*.

Very few authors have taken into consideration the peculiar course of the facial vein although Marriner (8) and Gillies (4) have fully described it under incorrect terminology in the two Australian species of *Hyla*. Ghosh (4), who has described the anatomy of *B. melanostictus* makes no reference to the facial vein nor even to the distribution of the cutaneous vein which differs so much from that of *Rana*. I have shown above that three different genera, *Cacopus*, *Hyla* and *Bufo*,—show the third type of course of the facial vein. It is a well-known fact that the latter two, i.e., *Hyla* and *Bufo*, are more related in anatomical features to one another than any other Anuran, and we have here further evidence of this not only in the close similarity of the facio-mandibular connection in the two but also in the general distribution of the cutaneous vein. *Cacopus*, though related to *Hyla* and *Bufo* as regards the course of the facial vein, stands out as unique in the Anura in the formation of the right precaval, if the arrangement described above is proved to be a normal characteristic.

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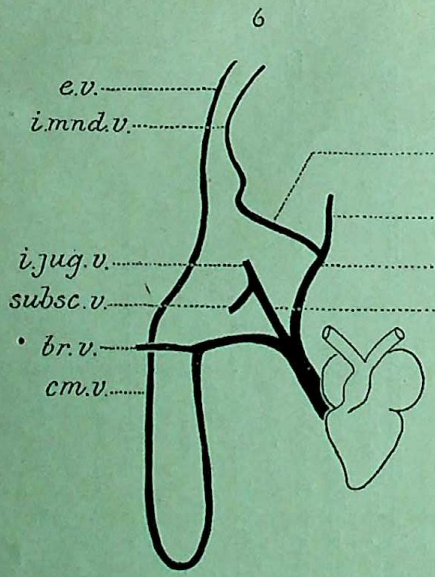

Fig. 6. Diagrammatic representation of anterior veins as described in text-books (for comparison).

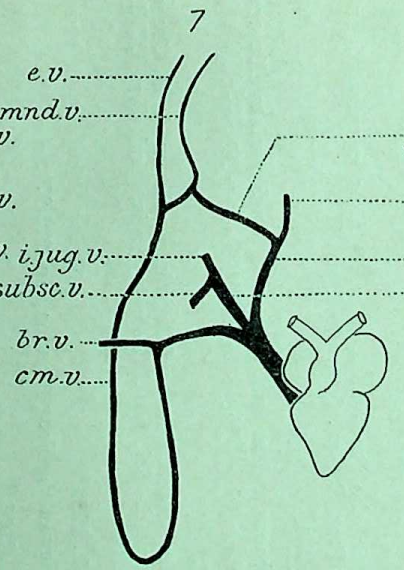

Fig. 7. Diagrammatic representation of anterior veins as found in *Rana tigrina*.

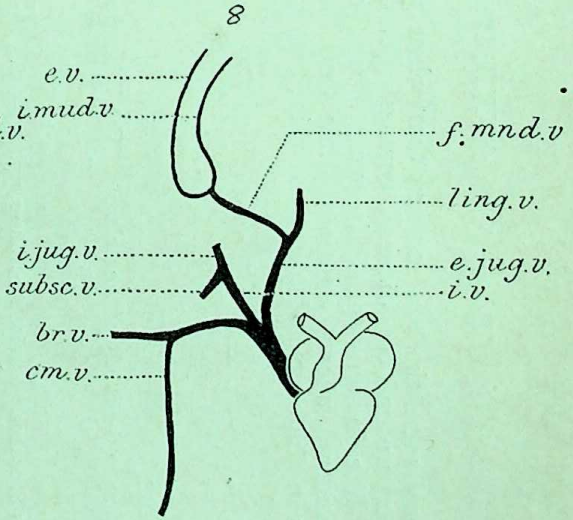

Fig. 8. Diagrammatic representation of anterior veins as found in *Bufo melanostictus*.

br.v.–brachial vein; *cm.v.*–musculo-cutaneous vein; *e.jug.v.*–external jugular vein; *f.mnd.v.*–facio-mandibular vein; *f.v.*–facial vein; *i.jug.v.*–internal jugular vein; *i.mnd.v.*–internal mandibular vein; *i.v.*–innominate vein; *ling.v.*–lingual vein; *mnd.v.*–mandibular vein; *subsc.v.*–subscapular vein.

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Strange as it may seem, the fact remains that when we survey the genus *Rana* we find two different courses taken up by the facial vein. The Indian frogs of the genus *Rana* (i.e., the six species considered above) certainly differ from the extra-Indian species in the course of the facial vein if not in other features.

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The Genitalia of the Common Indian Cockroach— *Periplaneta americana* Linn.

By A. C. Sen.

The students of Zoology and Entomology in this country find much difficulty in studying insects as most of the accounts available for their guidance are based on foreign species. This is specially true of the cockroach which is studied as a type of the group Insecta by both elementary and advanced students. The most important structures that confuse the students are the genitalia. Their structure, as is well known, is very important both from systematic and morphological view-points. It is, therefore, desirable that students should be familiar with the morphology of these organs, and in this paper I describe in detail the structure of the genitalia of the most common Indian cockroach, *Periplaneta americana* Linn.

The super-family Blattoidea to which the cockroaches belong is fairly well represented in this country. In addition to the most common species *Periplaneta americana* Linn., *P. australis*, *Blatta germanica* and *B. orientalis* are generally met with. In large cities like Calcutta, Madras, Lahore, Bangalore, etc., *P. americana* is the only species that is generally found; the other species are rare and more difficult to obtain. At one time *Blatta orientalis* was considered to be the typical Oriental cockroach, and as the name suggests its original habitat was considered to be Asia (Comstock). At present, however, the species is much less common and is confined to rural areas only. In Bengal, Bihar and Orissa, Madras Presidency and the Mysore State *Blatta orientalis* is almost absent. In the Punjab it was quite common some years ago, but is not so now, although it is not so rare as in the provinces mentioned above. The reason of the scarcity of *Blatta orientalis* may be ascribed to the fact that its female, which is very small and wingless, can easily be caught and destroyed by its enemies. In the rural parts of South India the smaller species are generally represented by *Blatta germanica*. Lloyd (1910) in his work on 'Indian Types' for the students of Zoology cited *Periplaneta australis* as the typical Indian cockroach. Presumably this species was the most common at that time.

This investigation was undertaken at the suggestion of Dr. H. S. Pruthi, Officer-in-Charge of the Entomological Section of the Zoological Survey of India, and I wish to express my feelings of gratitude to him for his valuable criticism of the work. My thanks are also due to Mr. Nazir Ahmed of

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Lahore, and Mr. S. Annand Rao of Bangalore, for helping me with valuable information about the distribution of the cockroaches.

Technique.

A live specimen was chloroformed in a glass-jar. After it had died and was still soft, its abdominal segments were counted and the segments bearing the genitalia determined. The terminal abdominal parts were then separated from the rest of the body and put in a test-tube containing ten per cent. KOH solution, and heated for a few minutes. This dissolved all the soft parts so that the chitinous portions only remained behind. These were then treated with distilled water to which a few drops of acetic acid had been added, and then passed through the different grades of alcohol and put into cedar-wood oil and kept overnight therein. The appendages comprising the genitalia were then dissected out, cleared in Xylol and mounted in Canada Balsam.

The diagrams have been drawn with the help of a Camera Lucida.

The Abdomen and the Terminal Abdominal Structures.

The abdomen consists of ten segments, the first seven of which are quite distinct. As is common in all insects generally,

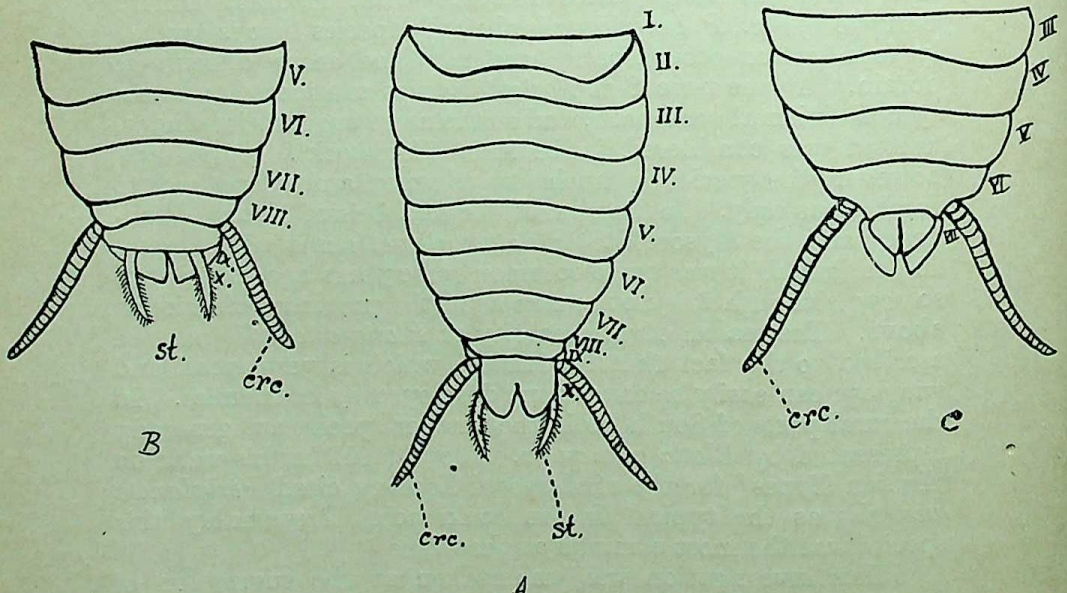

Fig. 1. Abdomen of a *P. americana*.

A. Male; dorsal view. *B*. Male; ventral view. *C*. Female; ventral view. *crc*. cercus; *st*. style.

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the segmental plates are known as the tergum and the sternum, to denote the upper and lower coverings respectively. These plates meet one another on the sides, there being no pleuræ or the lateral plates. On either side of the base of the last segment there is a pair of jointed, tapering and rod-like appendages, called the cerci (*vide infra*).

In the male, the first seven terga are large and conspicuous; the eighth tergum is fan-shaped and flattened and is divided into two wings by a deep median notch. The sternum of the first segment is extremely small, the same region of the next six segments is larger, the eighth sternum is narrower than the preceding and the ninth, which is the smallest of all, is concealed by the eighth. The distal margin of the ninth sternum bears a pair of styli (*vide infra*), which are not jointed.

In the female also the first seven terga are large and distinct, the eighth and ninth terga are smaller and are almost hidden by the seventh. The tenth tergum is large; it is divided into two parts. Only seven abdominal sterna are visible; the first is very small, the last or the seventh sternum is enlarged and encloses and supports the female genitalia. There are no styli in this sex.

The Cerci.

The cerci (fig. 1, *crc.*) are a pair of slender, many-jointed (20) appendages, borne by the lateral regions of the terminal or anal segment in both sexes. These are thicker at the base and gradually taper in the distal region. Movements of the cerci is controlled by special muscles; their function may be tactile or olfactory; or they may be modified to function as accessory copulatory organs.

The cerci are present in a large number of insects, but differ much in structure in the different groups. In the Acridiidæ, which are included in the same order as the cockroach, these are reduced to a single joint; in Thysanura, Mantidæ, etc., they are long and many-jointed; in Odonata these are long but unjointed; in Dermaptera also they are not jointed but are large, strong and curved, resembling a pair of forceps. In some Coleoptera they are two-jointed and are covered with hairs.

Different authorities gave the name cerci to morphologically different appendages. Some regarded these as prolongations of the pleurities of the terminal segment. Berlese (1909) was of opinion that the cerci may be present on the 9th, 10th as well as on the 11th abdominal segments and these, he termed as the pro-cerci, meso-cerci and acro-cerci or cerci proper respectively. Verhoeff (1895) on the other hand considered cerci to be the true segmental appendages of the 10th abdominal segment. Verhoeff's view is generally accepted. He laid much

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stress on the fact that the appendages must be segmented to be called true cerci.

The Genitalia.

The difference between the genitalia and the reproductive organs must be clearly understood. The term genitalia is used only for the external appendages associated with the function of reproduction. The term gonapophyses introduced by Huxley in connection with Crustacea are also freely used to indicate these appendages. When fully developed, there are three pairs of such appendages in both sexes in most insects, one pair on the 8th and two pairs on the 9th abdominal segments. The anterior-most pair (on the 8th) in the males of most insects disappears before the individual leaves the egg; of the two pairs on the 9th segment, the posterior pair during development gets divided longitudinally, giving rise to two pairs. Thus the number of appendages in the adult consists of three pairs, though all of them are on the ninth segment (Pruthi, 1924). In the female, all the primitive three pairs of appendages remain, and they constitute what is known as the ovipositor.

(*i*) *The male genitalia* (fig. 2).

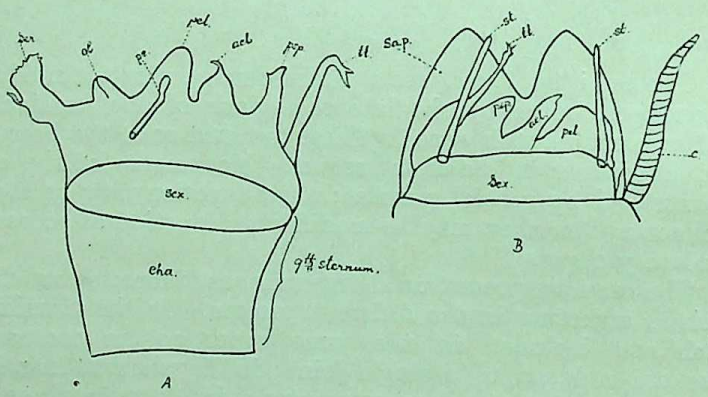

Fig. 2. Male Genitalia.

A. dorsal view. *B*. as seen when undissected. *acl.*, acutolobus; *c.*, cercus; *eha.*, euhypandrium; *ol.*, oval lobes; *pe.*, penis; *pel.*, penis-lobus; *psp.*, pseudo-penis; *sap.*, supra-anal plate; *sex.*, syncoxite; *ser.*, serrated lobe; *tt.*, titillator.

The male genital aperture is situated on the membrane between the 9th and 10th abdominal sterna. As already described, the 8th tergum is narrow and short and completely covers the 9th; the 10th tergum is flattened, fan-shaped, and is divided into two wings by a deep median notch. The 8th sternum is very small, but the 9th is quite large and lies near

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the genitalia and is termed as the sub-genital plate by some authors. Crampton (1918) called it 'hypandrium' in order to distinguish it from the sub-genital plate (7th sternite) of the female. The hypandrium consists of two parts, the proximal one being called the euhypandrium (*eha.*) and the distal part the syncoxite (*sex.*). The euhypandrium is generally concealed by the 8th sternum. The apical margin of the syncoxite bears the styli, which are described in detail hereafter.

The male genitalia of cockroaches are extremely asymmetrical. They consist of the copulatory organ proper or penis which receives the ejaculatory duct, and certain other appendages closely situated together, no two of which are equal. All these structures are enclosed in a membranous sac or the genital pouch, which is formed by the greatly enlarged intersegmental membrane between the 9th and 10th segments.

The penis is situated on the dorsal surface of the penis-lobus (fig. 2, *pel.*), which is a membranous sac and completely covers the penis. It is very small and more or less globular in shape. On its ventral side there is a pointed process (*acl.*), called the acutolobus (Crampton, 1925). The basal portion of the acutolobus is wide and curved and the distal portion is slender and pointed. Just on the ventral side of the acutolobus there is a stump-like structure, called the pseudo-penis (*psp.*), which is slightly wider in the proximal region and pointed distally. This structure is supposed to aid the penis in introducing the genital products into the uterus of the female. A small papilla is seen on its ventral side. The ventral-most structure is an elongated, hook-like appendage, which is known as 'titillator' (*tt.*). This appendage is supposed to be for dilating the parts of the female during mating.

On the dorsal side of the penis there are two small oval structures (*ol.*), the function of which is not known. On the dorsal side of these structures there is a flat, fan-shaped serrated lobe (*ser.*). The whole of its distal region is saw-like and from its basal portion a curved finger-like outgrowth is seen to be protruded. This structure is supposed to hold the female during mating.

A great deal of difference of opinion exists among workers as to the homologies of the male genitalia of the Blattoidea with those of other insects. Walker (1922) homologised the titillator and the serrated lobe with the parameres of other insects.

(*ii*) *The female genitalia* (fig. 3).

The external reproductive organs of the female cockroach consists of three pairs of appendages which are associated with the seventh, eighth and ninth segments. These appendages constitute the ovipositor. The posterior abdominal segments are completely telescoped into and hidden by the seventh

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segment. The tergites of these segments are reduced to narrow bands. The seventh sternum is incompletely divided into anterior and posterior sections.

The ovipositor in specialised insects such as Ichneumonid Hymenoptera, saw-flies, etc., is used for boring holes in wood or in the bodies of other insects, but in the cockroach the ovipositor

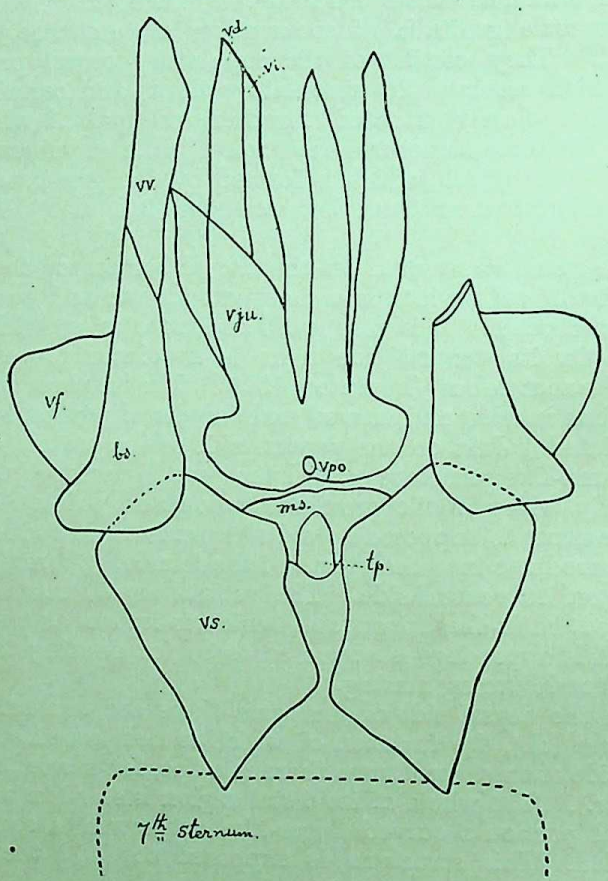

FIG. 3. Female Genitalia. X 72.

Ventral view; right valvulæ separated. *bs.*, basi valvula; *ms.*, medisternite; *tp.*, thecapore; *vd.*, dorsal valvula; *vf.*, valviferus; *vi.*, inner valvula; *vju.*, valvijugum; *vs.*, valvisternite; *vv.*, ventral valvula.

is used for grasping the egg capsule only. Its shape indicates that the ovipositor is passive in copulation.

The three pairs of appendages that form the ovipositor in the cockroach are known as the ventral, dorsal and inner valvulæ respectively. The ovipositor is kept in its proper position by means of some sclerites at its base.

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The ovipositor in *P. americana* is greatly reduced and completely concealed by the large, medially divided 'sub-genital plate' which is the sternum of the seventh segment. It becomes visible only when the 7th sternum is removed. The sterna of the 8th, 9th and 10th are atrophied in the adult cockroach.

The ventral valvulæ (*vv.*) or the anteriormost appendages, belonging to the 8th segment, are slightly thicker and flattened at the bases and narrower in the dorsal region. Each valvula consists of two segments, namely, a short basal segment, the basi-valvula (*bs.*) of Crampton (1917) and a longer pointed portion, called the 'shaft' (Walker). The bases of the ventral valvulæ are connected with one another by a chitinous band (*vf.*), the structure of which varies in different species.

The inner valvulæ (*vi.*) or the second pair of appendages are more slender and smaller. They are situated close together and are almost covered by the dorsal valvulæ. Unless all the components of the genitalia are separated, the actual size and shape of the inner valvulæ cannot be seen. They are almost of the same length as the dorsal valvulæ (*vide infra*), but are not so wide. Moreover, the inner and the dorsal valvulæ are more pointed at their apices than the ventral valvulæ.

The dorsal valvulæ (*vd.*) or the third pair of appendages are slightly thicker than the ventral valvulæ. They are closely attached to the inner valvulæ. A small sclerite covers the basal portion of the dorsal and inner valvulæ; it was termed valvijugum (*vju.*) by Crampton (1925).

The sclerites situated at the base of the ovipositor, referred to above, are quite conspicuous and strong. Most prominent of these are a pair of large appendages, squarish in shape, which are called the valvisternite (*vs.*). On the middle portion of the anterior side of the valvisternite, there is a small sclerite known as the 'medisternite' (*ms.*) (Crampton). The posterior portion of the medisternite surrounds the 'thecapore' (*tp.*) or the opening of the spermatheca. Thus the opening of the spermatheca is situated posterior to the opening of the uterus.

The Styli.

The styli are a pair of appendages found on the distal margin of the ninth sternum (fig. 1). They are found in the male cockroach only. These are unjointed, slender and shorter than the cerci (*vide supra*) and are thinly covered with bristles or hairs. These are almost uniform in shape. The actual function of the styli is not known but they are supposed to render aid during copulation.

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Mating.

A few words about the mating of the coekroaches will not be inappropriate at this place. In their comprehensive work on the Cockroach, Miall and Denny (1886) stated that 'very little is known about the act of copulation among cockroaches and the opportunity of observation are few'. I had the opportunity of observing this phenomenon sometime ago and my conclusions are as follows:—

When pairing the two sexes lie one over the other, as is the case in *Bombyx mori* (Silkworm). The tip of the abdomen of the male is inserted under the subgenital plate of the female and is firmly held there, so much so that one individual can be pulled by moving the other. The male is not 'beneath the female' as noted by Miall and Denny (page 180). I could not determine the actual duration of copulation, but I believe it lasts several hours.

Several appendages are associated with the function of copulation. Some appendages such as the cerci and the styli, aid in holding the opposite sex, while others like the pseudo-penis, the titillator and the serrated lobe aid in the introduction of the genital products.

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A Short Note of the Red-billed Chough, *Pyrrhocorax pyrrhocorax* Linn.

By M. N. Acharjie.

The genus *Pyrrhocorax* Tunst belonging to the family Corvidae contains two species of Choughs, *viz. P. pyrrhocorax* (Linn.) and *P. graculus* (Linn.), which occur over a great area of Europe and Asia; the range of the former species, however, extends as far as the hilly parts of Africa. They resemble the true crows in body colour, but differ from them considerably in the colouration and character of the bill and feet. Both these species are found in India and they are essentially mountain birds and keep to the higher elevations of the Himalayas. In the collection of the Zoological Survey of India there are several examples of both these species. I have made a detailed study of *P. pyrrhocorax* (Linn.) in reference to the measurements which, I find, differ considerably from the measurements recorded by Mr. Stuart Baker (Vol. I, *Fauna, British India:* Birds. 2nd edition). But before I record my observations, I think it necessary to point out that in *P. pyrrhocorax* the bill is remarkably long and the feet are of a bright red colour: the culmen is slender and distinctly, though gently, curved throughout its length: the tarsus is smooth and covered with an unbroken lamina in front and behind: the narial plumes are short and dense: the sexes are alike in colour, but the female is appreciably smaller. From the published accounts it appears that this species, occurring as it does, over a considerable area of the three continents mentioned above, is never constant in respect of its size and dimensions. Hume ('*Lahore to Yarkand*', p. 243) has noted 'This species is one which varies very greatly in size and (in the) length of bill according to sex and age'. Although it is easy to see that sex and age might to some extent account for the differences, yet these can hardly be regarded as factors satisfactorily determining the problem of such variability as is found to exist between two sets or series of birds which are separated from each other by immense barriers of land and appear to be more or less isolated in their distribution. Nor is this variability specially marked only between individuals from the two extremities of a Zoo-geographical region. It has been noticed, for instance, in specimens belonging to the same section of the Palaearctic Region, *viz.* West Palaearctic, where, for example, the choughs of the British Isles show a remarkable tendency of being smaller than the continental birds. The wing length

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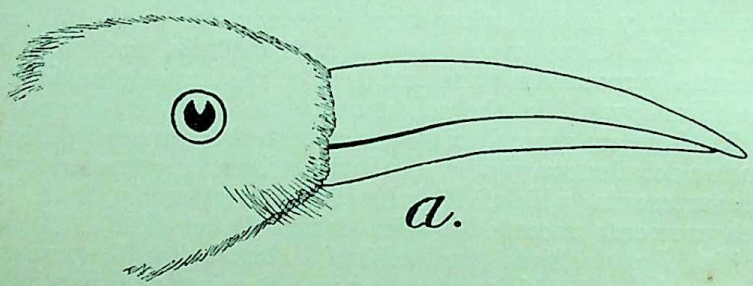
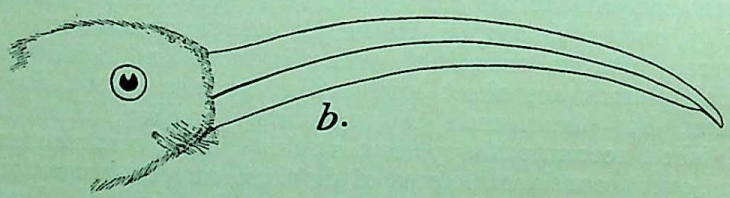
for the European birds as recorded by W. Ramsay is 275–315 mm., whereas that of the British birds recorded by Witherby is 270–310 mm. The study of the Himalayan Choughs reveals measurements differing markedly from the data available from the examination of specimens from other countries. Notwithstanding this immense variation in size, ornithologists generally appear not disposed towards recognizing this character as sufficient to justify the splitting of the individuals into clear-cut and well-defined races or sub-species. The Indian Chough is, therefore, not regarded as worth separating from the European bird. Mr. Stuart Baker has recorded the following measurements of Indian specimens :—

Wing: 270–315 mm.; culmen: 45–60 mm.; tarsus: 45–53 mm.



(*a*) Specimen of *P. pyrrhocorax* showing normal culmen, *Nat. Size.*



(*b*) Specimen of *P. pyrrhocorax* showing abnormally long culmen, × $\frac{2}{3}$.

My examination of specimens in the collection of the Indian Museum yields the undernoted results :—

Reg. No.	Sex.	Locality.	Wing.	Culmen.	Bill from Nostril.	Tarsus.
8286	♀	Bhutan	291 mm.	80 mm.	73 mm.	60 mm.
19333	....	Leh, Ladak	322 mm.	56 mm.	49 mm.	55 mm.
19334	....	Leh, Ladak	326 mm.	56 mm.	51 mm.	58 mm.
24198	....	....	300 mm.	103 mm.	96 mm.	63 mm.
24647	....	Bhutan	301 mm.	73·5 mm.	56 mm.	65 mm.
24954	♀	Tibet	310 mm.	52 mm.	49 mm.	58 mm.
Average	....	....	308·3 mm.	70·1 mm.	62·3 mm.	59.8 mm.

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It is surprising that the measurements noticed in these cases, specially as regards tarsus and culmen, far exceed those given by Mr. Stuart Baker. Examining the specimen (Reg. No. 24198) in the above list, one notices that its culmen and tarsus are remarkably large. The specimen is under moult and being for some time subject to captivity (in the Calcutta Zoo) shows abnormal white stains on some feathers; *e.g.* the sixth primary is bleached near the tip on both the webs, the seventh has broad white tips, while the eighth has much more white marks. The ninth has a distinctly bleached appearance. The Red-billed Chough in other parts of the Palaearctic Region appear to be invariably smaller than the Himalayan birds, and it is interesting to compare the latter with some specimens of the Turkestan which are in the collection of the Indian Museum.

Reg. No.	Sex.	Locality.	Wing.	Culmen.	Bill from Nostril.	Tarsus.
14195	♀	Turkestan	277 mm.	46 mm.	40 mm.	53 mm.
13269	♂	Turkestan	303 mm.	54 mm.	46 mm.	52 mm.
14194	♂	Turkestan	310 mm.	52 mm.	45 mm.	55 mm.
Average	....	....	296·7 mm.	50·7 mm.	43·6 mm.	53·3 mm.

Here the average dimension of the Turkestan birds hardly corresponds to that of the Himalayan specimens. While *P. pyrrhocorax* (Linn.) generally has a wide range, the Himalayan bird appears to be more or less isolated in its distribution. Mr. Stuart Baker records that it is 'found throughout the Himalayas to Eastern Tibet; in summer up to 16,000 feet and over, descending in winter to 5,000 feet or even lower'. Its food is obtained mostly on the ground. These birds are found in and about cultivated fields and adjacent rocky grounds of the villages of the higher Himalayas, where they are noticed to occur in fairly large flocks.

I record here my great indebtedness to Lt.-Col. R. B. Seymour Sewell, Director of the Zoological Survey of India, for kindly going through my manuscript and making valuable suggestions. My thanks are also due to Dr. S. C. Law under whose guidance I worked out and prepared this note.

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Buchanan's Ichthyological Manuscript entitled "*Piscium Bengalae Inferioris Delineationes.*"

By Sunder Lal Hora.

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Early this year Mr. Gilbert P. Whitley, Ichthyologist at the Australian Museum, presented to the Asiatic Society of Bengal the unique and hitherto unknown manuscript entitled "Piscium Bengalae inferioris Delineationes septuaginta octo" by Dr. Francis Buchanan (afterwards Francis Hamilton). The manuscript is of special interest to the students of Indian Ichthyology, and particularly to workers in Calcutta, as most of the species detailed in the manuscript were obtained in its neighbourhood. The vernacular names of fishes given in the manuscript are those that were current at the time in Calcutta, Khulna, Luckipoor, and the neighbouring villages of Bengal. Though a number of the scientific names [1] employed in the manuscript were never published, it is possible [2] to refer these species to their published accounts in the "Gangetic Fishes" with the help of their local names. The manuscript also provides further material to clear the controversy regarding Buchanan's fish drawings and the use made of them in connection with the study of Indian fishes.

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1 In the list of species at the end I have given the MS. scientific names in order to clear up certain points in connection with the specific limits of the species described in the "Gangetic Fishes". As Buchanan's earlier correspondence, "Original Notes" and his delineations bear these names it has been thought advisable to publish them even at the risk of introducing a large number of still-born new names. Day in publishing an account of the Fish and Fisheries of Bengal (Hunter's *Statistical Account of Bengal*, XX, 1877) gave a number of Buchanan's MS. names. Very fortunately they have been left alone and not introduced into synonymies. I hope the names that are being published now will also receive a similar treatment. Their utility lies in a different sphere altogether and they are not of much importance for purposes of synonymies.

2 In the volume of original notes concerning the "Gangetic Fishes" (now preserved in the library of the India Office, London) the vernacular names of the species are given below the scientific names. Moreover, these "original notes" contain the earlier scientific names under which Buchanan intended to describe the various species. It is with the help of these "original notes" that I have been able to refer all the species in the manuscript to the published scientific names under which they have been described in the "Gangetic Fishes".

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Having already reported on Buchanan's fish-drawings[1] in the library of the Asiatic Society of Bengal as well as in the various libraries in London, I take this opportunity to make a few comments on this valuable manuscript for convenience of reference in future. I have here to offer my sincere thanks to Mr. Gilbert P. Whitley for communicating to me his most valuable discovery with the least possible delay, and for sending the manuscript to me for study while I was in London last year.

The Manuscript.

The manuscript is in the form of a bound volume and the numbered sheets in it total 78, each sheet being devoted to the description of one species. Besides there is one loose sheet marked 37 *, which contains the description of *Polynemus paradiseus* L. There are two more unnumbered sheets, one devoted to the index and the other to an introduction to the descriptive matter following. The descriptions of species as well as the introduction are in Buchanan's handwriting, whereas the index, which is full of errors in spellings, etc., is written in a different hand. This is further clear from the fact that the sheets in Buchanan's handwriting are watermarked 1794,[2] whereas the index sheet as well as the blank sheet at the end are watermarked 1798. Though Buchanan had intended to describe only 78 species in this work as is clear from the title, the index contains a list of 85 species. The discrepancy between these two numbers will be explained later (p. 127). The whole of the manuscript is written in Latin, and the introduction, of which I give below a free English translation, explains the object of this work. Introduction runs as follows:—

"Seventy-eight Descriptions of the Fishes of Lower Bengal.
"By Francis Buchanan, M.D.
"The Illustrations by Haludar, a Bengal youth.

"To the kind Reader:

"There are many fishes of Lower Bengal which are not described in this work, but although my business has now called me to a distant region I am unwilling that the work which I undertook of describing these fishes should be entirely wasted. Therefore I entrusted the work to Dr. John Fleming, whose kindness towards me is well known, and I obtained from him, previous to his departure for England, a promise that he would undertake the publication of it.

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[1] Hora, *Journ. Asiat. Soc. Bengal* (N.S.), XXII, pp. 99–115 (1927); *Mem. Ind. Mus.*, IX, pp. 169–192, pls. xiii–xxiii (1929).

[2] It is worthy of remark that Dr. Francis Buchanan entered the service of the Honourable East India Company as an Assistant Surgeon on the Bengal Establishment on 26th September, 1794.

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"I possessed but few books on fishes, so that I paid little attention to synonymy as being beyond my scope, but I have striven to figure in its natural colours every fish that came before me; indeed, while they were still alive in the water: and my description has always been the result of my personal examination of a recently captured specimen, a result which few ichthyologists writing on the fishes of India have been able to obtain. The Bengal names which are found among the descriptions are to be cited but that which follows the Bengal characters below the figures is put into English, using Dr. Halhed's method, as laid down in his *Bengali Grammar*. Dated Baruipur, January 3rd, 1800."

Buchanan's Early Interest in the Fishes of the Ganges.

It has been pointed out by Sir David Prain in his "Sketch of the life of Francis Hamilton" (p. xi, 1904) that Buchanan became interested in the study of Gangetic fishes while he was stationed at Puttahaut six miles north of Luckipoor. Buchanan resided at Puttahaut from the latter half of 1796 up to a considerable part of 1798. In the manuscript under report the habitat of several species is given as "Habitat in fluviis et stagnis Luccapurae", and, moreover, the local names then current at Luckipoor are given in the manuscript for several species of fish. Further it is clear from a letter to Roxburgh, dated 30th November, 1797, that at Puttahaut Buchanan was having drawings of fish made, for he says:—

"I have given my old painter a gold mohur a month and have him employed on fishes."

It is gratifying to note that the artist who made the exquisite illustrations of "Gangetic Fishes" was a Bengali young man by the name of Haludar. The science of Ichthyology is greatly indebted to this craftsman for his faithful delineations of Buchanan's species, for it is well known that Buchanan's species can be recognised much more easily from his drawings than from his descriptions. There is no doubt that Buchanan must have trained this young man for his work because in the above quoted letter he says:—

"I am attempting to make him do the outlines with some degree of accuracy; when he succeeds in that I shall begin to colour."

That shows the state of affairs in 1797, but it seems probable that by the beginning of 1800 his artist had become fairly competent. In the manuscript, however, Buchanan gives full credit to Haludar for all the 78 drawings illustrating his species.

Buchanan pursued more steadily his investigation of fishes while he was stationed at Baruipur in the 24 Pergunnahs, not far from Calcutta, from the beginning of October, 1798, till the

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commencement of 1800. It was at Baruipur that Buchanan conceived the idea of publishing an illustrated work on the fishes of the Ganges. This is clear from Buchanan's letter to Smith (Hora, *op. cit.*, 1929, p. 172) dated the 1st of January, 1799, in which he says :—

"Having at Luckipoor examined all the plants, I began to describe and draw fishes and have collected a good many. As a specimen Captain Burt of the *Duke of Montrose* will forward descriptions and drawings of 10 Cyprini..... When you have looked over these performances you will be able to inform me what I can do with them. If you think the whole would bear the expense of publication I would send you all that I have got. By next season I should suppose that I may have ready nearly 200 drawings of fishes."

It is probable that Smith advised Buchanan to publish his account of fishes in one volume, and the result seems to have been the manuscript dealt with here. There is no doubt, however, that Buchanan was not able to make as much progress with his fishes as he had anticipated when writing the above letter, for he seems to have had descriptions and drawings of only 78 species (instead of 200) by the beginning of 1800. Dr. John Fleming, who had undertaken the publication of the manuscript, was to seek the advice and assistance of Smith while in England, as is clear from Buchanan's letters to Smith dated the 3rd March, 1802, from Bassaria and dated 8th October, 1802, from Katmandu (Hora, *op. cit.*, 1929, p. 172).

Interruption of Buchanan's Investigation of Fishes.

In the introductory part of the manuscript Buchanan refers to some business that necessitated his going to a distant region. Evidently he is referring here to an opportunity that was offered to him of visiting Nepal, and his letter to Roxburgh dated Gorasan, 12th February, 1800, shows that he was able to set out on this journey, which had to be given up at the time as Buchanan was recalled from the Nepal frontier, and instructions, dated 24th February, 1800, were issued to him to visit and report on the territories of the Rajah of Mysore and on the country acquired by the Company after their war with the Sultan, as well as on that part of Malabar previously occupied by Marquis Cornwallis.

After a short stay in Calcutta Buchanan sailed for Madras leaving that place on 23rd April, 1800, to carry out the comprehensive instructions regarding the survey of the newly acquired territories. After the completion of his survey[1] Buchanan

[1] Descriptions and figures of 3 species of fish—*Cyprinus bendilisis*, *C. ariza* and *C. curmuca*—were published by Buchanan in his *Mysore Journey*, Vol. III (1807).

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returned to Madras on the 6th July, 1801, and thereafter came back to Calcutta. Shortly after Buchanan's return to Calcutta he was appointed to accompany the embassy that had been despatched under Captain Knox to the Court of Nepal. Buchanan was able to leave Calcutta for Nepal in the cold weather of 1801-02. It is certain that during his short stays at Calcutta on his recall from the Nepal journey and after his return from Madras, Buchanan had opportunities to see the manuscript and make alterations in certain scientific names which are noted in pencil in Buchanan's own handwriting. It is also probable that during these short visits Buchanan may have supplemented his manuscript by the addition of the descriptions of 7 more species, though only one of these is now preserved on a loose sheet; the names of the additional species are included in the index.

Mr. A. F. M. Abdul Ali, Keeper of the Imperial Records, has very kindly informed me that Dr. John Fleming embarked for Europe on the 24th December, 1802, on the Company's ship *Lady Jane Dundas*. It is thus clear that though Buchanan entrusted the manuscript to Fleming early in 1800, it did not leave the shores of India till December, 1802.

It is impossible to say why the whole of this manuscript or suitable portions of it were not published at the time. But the fact remains that after the manuscript left India no more was heard of it till 1931, when Mr. Gilbert P. Whitley (through his friend Mr. Melbourne Ward, who was in England searching for a copy of the "Gangetic Fishes"—G. P. W.) purchased it from Messrs. Wheldon & Wesley, London.

Buchanan returned from Nepal in March, 1803, and took up his old appointment at Baruipur, but in the cold weather of 1803-04 he was put in charge of the menagerie at Barrackpur. He continued in this appointment till the end of 1805 when he went to England. He returned to Calcutta early in 1807, and in the following September he was entrusted with the Survey of Bengal which he carried out till the end of 1814. It has been pointed out by Sir David Prain (p. xlii) that Buchanan's drawings and descriptions of fishes of the Survey period were supplementary to those made by himself when stationed at Puttahaut and Baruipur. Buchanan undoubtedly had his original notes on fishes with him as is clear from the local names of fishes mentioned in them, and I presume that he got back the drawings that may have accompanied the manuscript under report to England. So whoever had the manuscript, he had no drawings of fish to illustrate it, for I believe that Buchanan very rarely had duplicates[1] made of his fish drawings.

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[1] It has already been shown that Buchanan had drawings made of 226 species in all, including that of *Muraena serpens*. So far as I have

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Further Particulars concerning Buchanan's Fish Drawings.

Buchanan has remarked in the introduction that he had striven to figure in its natural colours *every fish* that came before him. This was possible for him to do at Puttahaut and Baruipur, but during the Survey period, when he must have been constantly on the move, this procedure would not have been possible. I have explained elsewhere (Hora, 1929, p. 178) why of the 272 species described in the "Gangetic Fishes" Buchanan did not make drawings of 47 species. In any case it is certain that Buchanan had drawings made of the seventy-eight species described in this manuscript. Of the additional seven species enlisted in the index, drawings of two, *viz. Polynemus risua* and *Mugil cephalus?*, were not made.

In the "Gangetic Fishes" 97 species[1] are illustrated. A reference to the table at the end shows that of these 72 are the same as are described in the present manuscript. The drawings of the remaining 6 species of the manuscript are now preserved as follows:—5, which Buchanan had with him but did not publish, are in the library of the India Office, London; whereas one drawing of *Cobitis guntea*, now preserved in the library of the Asiatic Society of Bengal, he seems to have left behind in India with the set of the Survey period presumably through oversight. Of the 5 drawings of the supplementary list of 7 species he had with him in England drawings of *Cyprinus* (*Bangana*) *mrigala* and *Muraena serpens*, both are published in the "Gangetic Fishes" though the latter species is not described anywhere in the work. I presume that the drawings of *Mugil albula?*, *Cyprinus* (*Cyprinus*) *gonius* and *C.* (*Bangana*) *reba* were also made at Buchanan's expense and that, through oversight or purposely, he left these behind together with the set of drawings of the Survey period.

In the "Gangetic Fishes" there are illustrations of 97 species and, as has been explained above, 73 of these are those of which Buchanan had drawings made at his own expense. The remaining 24, which are listed below, undoubtedly belong to the Survey period. With the exception of *Chanda lala* all had duplicate drawings. That Buchanan in carrying away these drawings did not deprive the Government of Bengal of

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been able to ascertain he had duplicates made of only 33 species, out of which 10 were made at his expense and were sent to Smith with his letter of 1st January, 1799 (9 of these are now preserved in the library of the *Linnean Society of London*); whereas the remaining 23 listed on p. 129 were executed during the Survey period at the Government expense, and were taken by Buchanan with him to England in 1815 to illustrate his "Gangetic Fishes".

[1] I have left out of calculation the drawing of "*Muraena serpens*" reproduced on pl. v, fig. 5, as the species is nowhere described in the work.

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the original drawings can be readily made out by referring to the table at the end of my paper published in 1929. The original drawings of the 23 species are now preserved in the library of the Asiatic Society of Bengal. The following is the list of the 24 species mentioned above :—

1. *Batrachoides gangene*, p. 34, pl. xiv, fig. 8.
2. *Ophiocephalus wrahl?*, p. 60, pl. xxxi, fig. 17.
3. *Ophiocephalus barca*, p. 67, pl. xxxv, fig. 20.
4. *Ophiocephalus aurantiacus*, p. 69, pl. xxiii, fig. 22.
5. *Chanda lala*, p. 114, pl. xxi, fig. 39.
6. *Platystacus chaca*, p. 140, pl. xxviii. fig. 43.
7. *Silurus* (*Callichrous*) *pabo*, p. 153, pl. xxii, fig. 48.
8. *Pimelodus rama*, p. 176, pl. iii, fig. 55.
9. *Pimelodus viridescens*, p. 173, pl. xi, fig. 56.
10. *Pimelodus cenia*, p. 174, pl. xxxi, fig. 57.
11. *Pimelodus tengana*, p. 176, pl. xxxix, fig. 58.
12. *Pimelodus carcio*, p. 181, pl. xxiii, fig. 60.
13. *Pimelodus nangra*, p. 193, pl. xi, fig. 63.
14. *Pimelodus menoda*, p. 203, pl. i, fig. 72.
15. *Pimelodus cavasius*, p. 203, pl. xi, fig. 67.
16. *Cyprinus* (*Chela*) *morar*, p. 264, pl. xxxi, fig. 75.
17. *Cyprinus* (*Barilius*) *cocsa*, p. 272, pl. iii, fig. 77.
18. *Cyprinus* (*Bangana*) *dero*, p. 277, pl. xxii, fig. 78.
19. *Cyprinus* (*Bangana*) *boga*, p. 286, pl. xxviii, fig. 80.
20. *Cyprinus* (*Cyprinus*) *curchius*, p. 289, pl. iv, fig. 82.
21. *Cyprinus* (*Cyprinus*) *nandina*, p. 300, pl. viii, fig. 84.
22. *Cyprinus* (*Morulius*) *morula*, p. 331, pl. xviii, fig. 91.
23. *Cobitis dario*, p. 354, pl. xxix, fig. 95.
24. *Cobitis geto*, p. 355, pl. xi, fig. 96.

Most of Buchanan's "original notes" are dated and from a perusal of these dates I had concluded (1929, p. 172) that Buchanan had used at least 15 illustrations in his "Fishes of the Ganges", which were made during the Survey period at the Government expense. My conjecture concerning these 15 species was correct and we now know for certain that there are 9 other species which should be included in this list.

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LIST OF SPECIES DESCRIBED OR MENTIONED IN THE MANUSCRIPT, WITH THEIR VERNACULAR NAMES AND REFERENCES TO PUBLISHED ACCOUNT IN THE "GANGETIC FISHES", ETC.

SERIAL No.	SPECIFIC NAME AS GIVEN IN MS.	LOCAL NAME AS GIVEN IN MS.	NAME UNDER WHICH DESCRIBED IN "GANGETIC FISHES".	REFERENCE TO DRAWINGS OF SPECIES NOT PUBLISHED BY BUCHANAN.
1.	*Tetrodon pulvinatus* B.	*Gang Potoca* Beng.	*Tetrodon fluviatilis*, p. 6, pl. xxx, fig. 1.	
2.	,, *laevis* B.	*Cutcutia* and *Pocoria potoca* Beng.	,, *cutcutia*, p. 8, pl. xviii, fig. 3.	
3.	,, *fornicatum* B.	*Boro potoca* Beng.	,, *potoca*, p. 7, pl. xviii, fig. 2.	
4.	*Muraena apterigia* B.	*Cuchia* Beng.	*Unibranchapertura cuchia*, p. 16, pl. xvi, fig. 4.	
5.	*Ophidium punctatum* B.	*Pancal* Beng.	*Macrognathus pancalus*, p. 30, pl. xxii, fig. 7.	
6.	,, *aculeatum* Bloch.	*Tara baïm* Beng.	,, *aculeatus*, p. 29.	Hora, pl. xiv, fig. 4.
7.	,, *simack* Walb.	*Baïm* Beng.	,, *armatus*, p. 28, pl. xxxvii, fig. 6.	
8.	*Gobius Eleotris* Lin. ?	*Pucoria balia* Beng.	*Gobius giuris*, p. 51, pl. xxxiii, fig. 15.	
9.	,, *pectenirostris* Walb. ?	*Dans* Beng.	,, *plinianus*, p. 45, pl. xxxv, fig. 13.	
10.	,, *novemradiatus* B.	*Dans* Beng.	,, *novemradiatus*, p. 47, pl. ii, fig. 14.	
11.	,, *Boddarti* Walb. ?	*Chaïngua* Beng.	,, *viridis*, p. 42, pl. xxxii, fig. 12.	
12.	,, *subunitus* B.	*Chaïngua* Beng.	,, *changua*, p. 41, pl. v, fig. 11.	

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Serial No.	Specific name as given in MS.	Local name as given in MS.	Name under which described in "Gangetic Fishes".	Reference to drawings of species not published by Buchanan.
13.	*Gobius bidentatus* B.	*Baeto chaïngua* and *Guli chaïngua* Beng.	*Gobius bato*, p. 40, pl. xxxvii, fig. 10.	
14.	,, *anguillaris* Lin ?	*Lal chaïngua* Beng.	*Gobioides rubicundus*, p. 37, pl. v, fig. 9.	
15.	*Pleuronectes trichodactylus* Lin. ?	*Charcuti*, *Mairoa* and *Carul putta* Beng.	*Pleuronectes pan*, p. 130, pl. xxiv, fig. 42.	
16.	*Zeus oblongus* B.	*Chanda* Beng.	*Chanda nama*, p. 109, pl. xxxix, fig. 37.	
17.	,, *Nalua* B.	*Nalua chanda* Beng.	,, *nalua*, p. 107, pl. vi, fig. 36.	
18.	,, *percoides* B.	*Chuna chanda* Beng.	,, *ranga*, p. 113, pl. xvi, fig. 38.	
	,, ,, var. *auratus* B.			
19.	,, *argenteus* B.	*Gang chanda* Beng.	,, *ruconius*, p. 106, pl. xii, fig. 35.	
20.	*Chaetodon ? lusua* B.	*Lusua* Beng.	*Coius chatareus*, p. 101, pl. xiv, fig. 34.	
21.	,, *argus* L.	*Pairatali*, *Rup chanda* and *Chitra* Beng.	*Chaetodon pairatalius*, p. 122, pl. xiv, fig. 41.	
22.	*Sparus melagaster* B.	*Culi* Beng.	*Cheilodipterus culius*, p. 55, pl. v. fig. 16.	
23.	,, *vagabundus* B.	*Gaichua* and *Chaing* Beng.	*Ophiocephalus gachua*, p. 68, pl. xxi, fig. 21.	
24.	,, *emarginatus* B.	*Lata* (adult) and *Goraï* (young) Beng.	,, *lata*, p. 63, pl. xxxiv, fig. 18.	
25.	,, *spilotus* B.	*Gozal* and *Sal* Beng.	,, *marulius*, p. 65, pl. xvii, fig. 19.	

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Serial No.	Specific name as given in MS.	Local name as given in MS.	Name under which described in "Gangetic Fishes".	Reference to drawings of species not published by Buchanan.
26.	*Perca sparoides* B.	*Baidi* Beng.	*Labris badis*, p. 70, pl. xxv, fig. 23.	
27.	,, *nebulosa* B.	*Baida* and *Nandoz* Beng.	*Coius nandus*, p. 96, pl. xxx, fig. 32.	
28.	,, *setacea* B.	*Colescia* Beng.	*Trichopodus colisa*, p. 117, pl. xv, fig. 40.	
29.	,, *vagabunda* B.	*Coï* and *Cobozi* Beng.	*Coius cobojius*, p. 98, pl. xiii, fig. 33.	
30.	,, *bifurca* B.	*Polota*, *Naica* and *Gang Coi* Beng.	,, *polota*, p. 95, pl. xxxviii, fig. 31.	
31.	*Perca Datnia* B.	*Datnia*, *Polota* and *Gang Coï* Beng.	,, *datnia*, p. 88, pl. ix, fig. 29.	
32.	,, *Catcoïs* B.	*Catcoï* Beng.	,, *catus*, p. 90, pl. xxxviii, fig. 30.	
33.	,, *nilotica* Lin. ?	*Vecti* and *Vetci* Beng. *Cockup* English.	,, *vacti*, p. 86, pl. xvi, fig. 28.	
34.	,, *Cuja* B.	*Cuja Vecti* and *Coro Vecti* Beng.	*Bola cuja*, p. 81, pl. xii, fig. 27.	
35.	,, *Chaptis* B.	*Chapti Bola* Beng.	,, *chaptis*, p. 77, pl. x, fig. 25.	
36.	,, *Pama* B.	*Pama Bola* Beng. *Whiting* English.	,, *pama*, p. 78, pl. xxxii, fig. 26.	
37.	,, *Catoa* B.	*Cato Bola* and *Coïtur Bola* Beng.	,, *coitor*, p. 75, pl. xxvii, fig. 24.	
38.	*Cobitis Taenia* L.	*Butringy* and *Gunti* Beng.	*Cobitis guntea*, p. 353.	McClelland, pl. li, fig. 3.
39.	*Silurus tonsus* B.	*Silun* Beng.	*Pimelodus silonda*, p. 160, pl. vii, fig. 51 (50).	
40.	*Silurus sagittatus* B.	*Pungas* Beng.	,, *pangasius*, p. 163, pl. xxxiii, fig. 52.	
41.	,, *acanthias* B.	*Rita* Beng.	,, *rita*, p. 165, pls. xxiv and xxv, fig. 53.	

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Serial No.	Specific name as given in MS.	Local name as given in MS.	Name under which described in "Gangetic Fishes".	Reference to drawings of species not published by Buchanan.
42.	*Silurus ascita* Lin.	*Gagora Taingra* Beng.	*Pimelodus gagora*, p. 167, pl. x, fig. 54.	
43.	,, *porosus* B.	*Guli* and *Nuna Taingra* Beng.	,, *gulio*, p. 201, pl. xxiii, fig. 66.	
44.	,, *quadrivittatus* B.	*Taingra* Beng.	,, *tengara*, p. 183, pl. iii, fig. 61.	
45.	,, *pictus* B.	*Aungi* Beng.	,, *angius*, p. 180, pl. xxix, fig. 59.	
46.	,, *acutus* B.	*Tunti* and *Caingun* Beng.	,, *vacha*, p. 196, pl. xix, fig. 64.	
47.	,, *sexcarinatus* B.	*Cainpagori* and *Goingra* Beng.	,, *gagata*, p. 197, pl. xxxix, fig. 65.	
48.	,, *tegrinus* B.	*Bag Ari* Beng.	,, *bagarius*, p. 186, pl. vii, fig. 62.	
49.	,, *Clarias* Lin. ?	*Ciunci Ari* and *Aor* Beng.	,, *aor*, p. 205, pl. xx, fig. 68.	
50.	,, *unitus* B.	*Cani Magur* Beng.	*Plotosus canius*, p. 142, pl. xv, fig. 44.	
51.	,, *Batrachus* Lin.	*Magur* and *Jagur* Beng.	*Macropteronotus magur*, p. 146, pl. xxvi, fig. 45.	
52.	,, *pungentispinus* B.	*Singi* Beng.	*Silurus singio*, p. 147, pl. xxxvii, fig. 46.	
53.	,, *Asotus* Lin. ?	*Pabda* Beng.	,, (*Callichrous*) *pabda*, p. 150, pl. xxv, fig. 47.	
54.	,, *pelorius* B.	*Boali* Beng.	,, ,, *boalis*, p. 154, pl. xxix, fig. 49.	

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Serial No.	Specific name as given in MS.	Local name as given in MS.	Name under which described in "Gangetic Fishes".	Reference to drawings of species not published by Buchanan.
55.	*Silurus cultratus* B.	*Garua* Beng.	*Silurus* (*Callichrous*) *garua*, p. 156, pl. xxi, fig. 50.	
56.	*Esox ventricosus* B.	*Choe Puni* Beng.	*Esox panchax*, p. 211, pl. iii, fig. 69.	
57.	,, *scolopax* B.	*Cankila* Beng.	,, *cancila*, p. 213, pl. xxvii, fig. 70.	
58.	*Mugil protuberans* B.	*Corsula* Beng.	*Mugil corsula*, p. 221, pl. ix, fig. 97.	
59.	,, *latus* B.	*Parscia* and *Paidea* Beng.	,, *parsia*, p. 215, pl. xvii, fig. 71.	
60.	*Clupea cyprinoides* Broussoneti.	*Ciundona* and *Amolot* Beng.	*Cyprinodon cundinga*, p. 254.	Hora, pl. xviii, fig. 4.
61.	,, *fornicata* B.	*Chanpoli* and *Coara* Beng.	*Clupanodon chanpole*, p. 249, pl. xviii, fig. 74.	
62.	,, *Alosa* Lin. ?	*Holis* (adult) Beng.; *Hilsa* Hind.; *Sable Fish* English and *Coira* (young) Beng.	,, *ilisha*, p. 243, pl. xix, figs. 73 (75).	
63.	,, *cultrata* B.	*Chaila* Beng.	*Cyprinus* (*Chela*) *bacaila*, p. 265, pl. viii, fig. 76.	
64.	,, *ensiformis* B.	*Paisa* Beng.	*Clupea purava*, p. 238.	Hora, pl. xvii, fig. 3.
65.	,, *truncata* B.	*Gang paisa* Beng.	,, *telara*, p. 241, pl ii, fig. 72.	
66.	,, *didactyla* B.	*Poloi* Beng.	*Mystus kapirat*, p. 235.	Hora, pl. xxiii, fig. 1.
67.	*Cyprinus barbiger* B.	*Dana* and *Danicona* Beng.	*Cyprinus* (*Danio*) *danrica*, p. 325, pl. xvi, fig. 88.	
68.	,, *denticulatus* B.	*Ruhit* Beng.	*Cyprinus* (*Cyprinus*) *rohita*, p. 301, pl. xxxvi, fig. 85.	
69.	,, *atratus* B.	*Calbans* and *Calcuni* Beng.	,, ,, *calbasu*, p. 297, pl. ii, fig. 83 (33).	
70.	,, *rugosus* B.	*Soron Punti* Beng.	,, ,, *sarana*, p. 307.	Hora, pl. xxiii, fig. 5.

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Serial No.	Specific name as given in MS.	Local name as given in MS.	Name under which described in "Gangetic Fishes".	Reference to drawings of species not published by Buchanan.
71.	*Cyprinus chrysopareius* B.	*Punti* Beng.; *Sophori* Sanskrit.	*Cyprinus* (*Puntius*) *sophore*, p. 310, pl. xix, fig. 86.	
72.	,, *bimaculatus* B.	*Tit Punti* Beng.; *Ticto Sophori* Sanskrit.	,, ,, *ticto*, p. 314, pl. viii, fig. 87.	
73.	,, *niloticus* Lin.?	*Catla* Beng.	,, (*Cyprinus*) *catla*, p. 287, pl. xiii, fig. 81.	
74.	,, *bivittatus* B.	*Boro Daniconi* Beng.	,, (*Danio*) *daniconius*, p. 327, pl. xv, fig. 89.	
75.	,, *marginatus* B.	*Rasbora* Beng.	,, ,, *rasbora*, p. 329, pl. ii, fig. 90.	
76.	,, *bilineatus* B.	*Mourola*, *Cancuci* and *Tai* Beng.	,, (*Cabdio*) *mola*, p. 334, pl. xxxviii, fig. 92.	
77.	,, *trapezoides* B.	*Boeri* and *Amciuta* Beng.	,, ,, *cotio*, p. 339, pl. xxxix, fig. 93.	
78.	,, 18-*radiatus*	*Bansrata* Beng.	,, ,, *devario*, p. 341, pl. vi, fig. 94.	
37.†	*Polynemus paradiseus* L.	*Litsua* and *Rissua* Beng.; *Topissa* Hind. and *Mango Fish* English.	*Polynemus risua*, p. 228.	
4.†	*Muraena serpens*		Not described, pl. v, fig. 5.	
59+2.	*Mugil laevis*		*Mugil albula?*, p. 218.	Hora, pl. xxii, fig. 1.
59+3.	,, *bangon*		,, *cephalus?*, p. 219.	
79.	*Cyprinus gunea*		*Cyprinus* (*Cyprinus*) *gonius*, p. 292	A.S.B. drawing IV, 123 missing.
80.	,, *curabatta*		,, (*Bangana*) *reba*, p. 280.	McClelland, pl. lviii, fig. 1.
81.	,, *mugul*		,, ,, *mrigala*, p. 279, pl. vi, fig. 79.	

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Further Notes on Hamilton-Buchanan's *Cyprinus chagunio*.

By Sunder Lal Hora *and* D. D. Mukerji.

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In 1928, one[1] of us communicated to the Society a few remarks on Günther-Day controversy regarding the specific

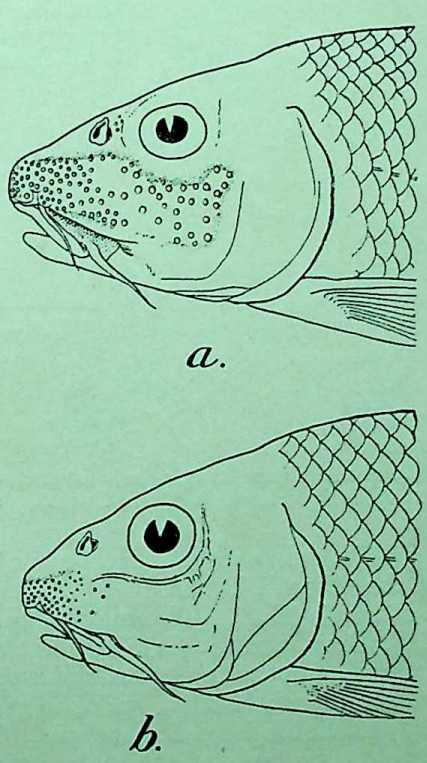

Fig. 1.—Lateral view of the head of a male (*a*) and a female (*b*) specimen of *Barbus chagunio* (Ham. Buch.). Same size.
In the male the maxillary groove is seen as the mouth is more widely open.

validity of Hamilton-Buchanan's *Cyprinus chagunio*,[2] which was obtained by its author "in the Yamuna, and in the

1 Hora, *Journ. Asiat. Soc. Bengal* (N.S.), XXIII, pp. 415–417 (1928).
2 Buchanan, *Gangetic Fishes*, p. 295 (1822).

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northern rivers of Behar and Bengal". It was indicated that Day was correct in associating the drawing labelled as "*Cyprinus kunta*" in the Society's collection (*A.S.B.*, I, 39; *Mem. Ind. Mus.*, IX, pl. xxi, fig. 7, 1929) with *Cyprinus chagunio* of the "Gangetic Fishes", and in relegating *Barbus beavani* Günther[1] to the synonymy of *B. chagunio*. Day[2] also regarded *B. spilopholus* McClelland[3] as a mere Assamese variety of *B. chagunio* and included it in the synonymy of Buchanan's species. Chaudhuri[4] refers to the whole controversy again in 1913, and redescribes *B. spilopholus* as a distinct

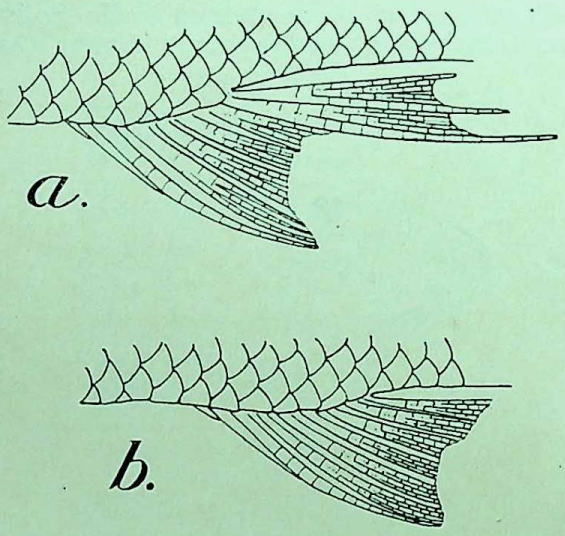

Fig. 2.—The structure of the anal fin of a male (*a*) and a female (*b*) specimen of *Barbus chagunio* (Ham. Buch.). $\times 1\frac{1}{2}$.

and definite species from an excellent specimen obtained by Dr. S. W. Kemp in the Abor Hills, Assam. He further seems to suggest that *B. chagunio* (H.B.) still remains undetermined.

Messrs. G. E. Shaw and E. O. Shebbeare's collection of fish from streams below Darjiling contains 18 specimens, some of which correspond with *Barbus spilopholus*, whereas the others are indistinguishable from *B. chagunio*. The two forms are undoubtedly closely allied and the main difference between them consists in the elongation of a number of posterior rays in the anal fin of the former. Moreover, in *B. spilopholus* the raised tuberculated areas on the head are well-defined and

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[1] Günther, *Cat. Fish. Brit. Mus.*, VII, p. 96 (1868).

[2] Day, *Fish. India*, p. 559, pl. cxxxvi, fig. 2 (1878).

[3] McClelland, *As. Res.* (Ind. Cyp.), XIX, pp. 272, 341, pl. xxxix, fig. 4 (1839).

[4] Chaudhuri, *Rec. Ind. Mus.*, VIII, p. 250, pl. viii, figs. 1, 1*a*, 1*b* (1913).

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compact, the black mark on the distal portions of some of the anterior rays of the dorsal fin is more prominent, and the body as a whole is more gorgeously coloured. In a number of fishes the elongated fin-rays, the gorgeous colouration and the tuberculated areas on the head are often associated with the males as forming secondary sexual characters. We dissected all the specimens with a view to determine the sexes of the individuals. There are four examples below 3·5 inches in length (*B. chagunio* is said to grow to a foot and a half in length both by Buchanan and by Day) in which the sex cannot be determined with certainty. Of the remaining fourteen individuals there are 6 males and 8 females.[1] All the male specimens possess the specific characters attributed to McClelland's *B. spilopholus*; whereas the females are referrable to *B. chagunio* of Buchanan. In view of what has been said above we have no hesitation in assigning both the forms to the same species—*B. chagunio* (H.B.). *Barbus chagunio* is a widely distributed fish of economic importance, and recently it has been found to occur in large numbers in the Myitkyina District of Upper Burma.[2]

Attention may also be directed to McClelland's remarks,[3] referred to by Chaudhuri (*op. cit.*), regarding the identity of *Cyprinus chagunio*. In describing *Barbus clavatus* from the rivers at the foot of the Sikkim Mountains he expressed the belief that his "large spined barbel" was identical with *B. chagunio*. This is not correct. These two species are abundantly distinct in their general build, in lepidosis and in the form and nature of the serrated dorsal spine. *B. clavatus* was insufficiently characterised and poorly illustrated by McClelland, and for a long time its specific limits could not be defined with precision. One[4] of us, however, obtained specimens of *B. clavatus* from the Naga Hills, Assam, redescribed it in 1921 and gave an illustration of the fish.

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[1] It is likely that most of the immature specimens are females as they do not exhibit even the slightest indication of the external characters of the males. The total number of specimens examined (18) is too small to say anything regarding the probable Sex Ratio in this species; but the above figures suggest that the females predominate in nature. This is further shown by the fact that females (=*B. chagunio*) have been found and recorded by several workers, whereas the males (=*B. spilopholus*) are rare in the museum collections.

[2] Prashad and Mukerji, *Rec. Ind. Mus.*, XXXI, p. 195 (1929).

[3] McClelland, *Calcutta Journ. Nat. Hist.*, V, p. 279 (1845).

[4] Hora, *Rec. Ind. Mus.*, XXII, p. 185, pl. ix, fig. 1 (1921).

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South Indian Acarina.

By M. C. Cherian.

Introduction.

It is unfortunate that very little attention has been paid to the study of mites in India, although they include some of our serious pests of crops. Possibly this may be attributed to the fact that they are very small creatures, the history and habits of which it is not easy either to follow or to study, and also to the scantiness of the literature at present available in India on that group.

Numerous enquiries have in the past been received from ryots from various parts of the Madras Presidency by the Entomological Section at Coimbatore requiring help against the ravages of the cholam (sorghum) mite, *Paratetranychus indicus*. It was at the instance of the Government Entomologist that the writer took up the study of mites in general and that of the cholam mite in particular.

Numerous specimens collected from Coimbatore and its environs were sent for favour of identification to Messrs. S. Hirst of the British Museum and A. M. Massee of the Research Institute, East Malling, Kent. Named specimens of most of the material sent were received recently and the writer wishes to acknowledge with thanks the valuable help received from them. In the present paper it is proposed to record various observations made by the writer on the habits and life-histories of some of these mites.

Classification.

The classification used in this paper is that of Nathan Banks given in his report No. 108 of the United States Department of Agriculture.

FAMILY TETRANYCHIDÆ.

Genus *PARATETRANYCHUS*.

Paratetranychus indicus Hirst.

Proc. Zool. Soc. London, 1923, Part IV, pp. 990-991.

Host-plants :—Cholam (*Andropogon sorghum*) and *Panicum javanicum*.

Habitat :—Collected at Coimbatore, Salem, Bellary, Chittoor, N. Arcot.

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Of the mites listed in this paper, this is one of the most destructive, being a serious pest of cholam (*Andropogon sorghum*) in the Madras Presidency. In certain years whole fields are known to have been destroyed by these mites. The mites suck the plant sap after lacerating the tissues with their mouth parts. As a result, red patches appear on the leaves which ultimately dry up. The whole life-cycle of the mite lasts 10–12 days. Parthenogenesis appears to be common in this species. *Scymnus gracilis* (Coccinellidæ), *Scolothrips sexmaculatus* (Thripidæ) and *Olygota flaviceps* (Staphylinidæ) have been recorded as predaceous on these mites and their eggs.

Paratetranychus punicæ Hirst.

Proc. Zool. Soc. London, 1926, Part III, pp. 830–832.
Host-plants :—Pomegranate (*Punica granatum*) and Grapevine (*Vitis vinifera*).
Habitat :—Collected at Coimbatore.

The mites are found on the upper surface of the leaves. They seem to prefer young leaves to old ones.

Paratetranychus oryzæ Hirst.

Proc. Zool. Soc. London, 1926, Part III, p. 830.
Host-plant :—Paddy leaves (*Oryza sativa*).
Habitat :—Collected at Coimbatore.

These mites attack paddy leaves but are not serious pests. On one occasion the writer found a few Gamasid mites predaceous on these.

Paratetranychus iseilemæ Hirst.

Ann. Mag. Nat. Hist., Ser. 9, Vol. XIV, 1924, pp. 524-525.
Host-plant :—Leaves of *Iseilema laxum*.
Habitat :—Collected at Coimbatore.

GENUS *TETRANYCHUS*.

Tetranychus telarius Linn.

Linnæus, *Syst. Nat.*, 1758, Ed. 10, p. 616.
Murray, '*Economic Entomology, Aptera*' pp. 97–110.
Miller, *Bulletin* 386. *Ohio Agricultural Expt. Station*, pp. 106–108.
Banks, Nathan, *Report No.* 108 *of the United States Department of Agriculture*, p. 35.
Hirst, *Proc. Zool. Soc. London*, 1920, Part I, pp. 55-56.

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Host-plants:—Castor (*Ricinus communis*), Agathi (*Sesbania grandiflora*), *Clitoria ternatea*, *Aristolochia bracteata*, *Alysicarpus longifolius*, *Argemone mexicana*, *Solanum nigrum*, Mulberry (*Morus alba*), Daincha (*Sesbania aculeata*), Jasmine (*Jasminum sambac*), *Codiœum interruptum*, Rose (*Rosa spp.*), *Acalypha wilkiesiana*, Ganja (*Cannabis sativa*), and Tomato (*Lycopersicum esculentum*).

Habitat:—Collected at Coimbatore, Madras, Salem, and North Arcot.

The life-history of this mite, found feeding on Castor leaves (*Ricinus communis*), has been worked out in detail. The complete life-cycle occupies about 10–12 days. Reddish spherical eggs are laid and as many as 65 eggs have been noted in the case of one female. Eggs hatch in 3-4 days. Newly hatched larvæ are pale-white in colour and have three pairs of legs. In two days the larvæ moult and become nymphs and are then possessed of four pairs of legs. The nymphs after two more moults become adults. The adults get their characteristic red colour after the first nymphal moult.

This mite has been noted as a serious pest of Ganja (*Cannabis sativa*) at Santavasal in North Arcot District and also at Coimbatore where it was grown for experimental purposes.

Tetranychus fici Hirst.

Proc. Zool. Soc. London, 1926, Part III, pp. 828-829.

Host-plant:—Fig leaves and fruits (*Ficus carica*).

Habitat:—Collected at Coimbatore.

This species sometimes causes serious damage to the fig leaves. Mr. Hirst informs me that the same species has been collected at Pusa from the same host-plant.

Tetranychus fijiensis Hirst.

Ann. Mag. Nat. Hist., Ser. 9, Vol. XIV, 1924, p. 522.

Host-plant:—Coconut leaves (*Cocos nucifera*).

Habitat:—Collected at Coimbatore.

Mr. Hirst thinks that this is a variety of *Tetranychus fijiensis* described by him in the above-mentioned publication. This is not so important as another mite, *Raoiella indica*, found on the same host-plant.

Tetranychus bioculatus Wood-Mason.

Wood-Mason, '*Report on the Tea Mite and Tea Bug of Assam* 1884'.

Fletcher, '*Some South Indian Insects*,' pp. 544-545.

Host-plant:—Tea leaves (*Camellia thea*).

Habitat:—Nilgiris and probably in other Tea Districts of South India.

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Mr. Hirst thinks that *T. bioculatus* may be a synonym of *T. telarius*. Mr. Green says that this mite is the same as the 'Red Spider' of the Coffee tree, described previously as *Acarus coffeæ* by Nietner in his 'Observations on the natural enemies of the Coffee tree in Ceylon'.

Tetranychus (*Schizotetranychus*) *hindustanicus* Hirst.

Ann. Mag. Nat. Hist., Series 9, Vol. XIV, 1924, pp. 525-526.
Host-plants:—Citrus (*Citrus aurantium*), Persian Neem (*Melia azedarach*), and Margosa (*Azadirachta indica*).
Habitat:—Collected at Coimbatore.

This is one of the pests of Citrus trees. The mites, living under the shelter of webs, suck the leaf sap with the result that discoloured patches are produced on the leaves. Adult mites are greenish yellow in colour and their eggs are also of the same colour and are round and flat.

Tetranychus (*Schizotetranychus*) *andropogoni* Hirst.

Proc. Zool. Soc. London, 1926, Part III, pp. 828–830.
Host-plant:—*Andropogon annulatus* leaves.
Habitat:—Collected at Coimbatore and Aduturai (*Anandan Coll.*).

Andropogon annulatus is one of the common grasses found at Coimbatore. In cases of serious attack the leaves may wither.

GENUS *RAOIELLA*.

Raoiella indica Hirst.

Ann. Mag. Nat. Hist., Ser. 9, Vol. XIV, 1924, p. 522.
Host-plant:—Coconut leaves (*Cocos nucifera*).
Habitat:—Collected at Coimbatore.

This is the only species of this genus noted so far. The mites live on the lower surface of the leaves and are found in large numbers in October, November, and December.

FAMILY TROMBIDIIDÆ.

GENUS *TROMBIDIUM*.

Trombidium gigas Troussart.

Berlese, *Redia*, Vol. VIII, 1912, pp. 243-244.
Ann. Soc. Ent. France, 1894, p. 92.
Host:—Found in soil.
Habitat:—Krishnapuram village near Kaveripatnam and Coimbatore.

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These mites are velvety red in colour, and are found in large numbers in the soil just after the rains. It is reported that adults wander about feeding on small insects. They, however, did not attack a few caterpillars supplied to them under confinement. The writer has not come across larval forms of this mite.

GENUS *PARACHYZERIA*.

Parachyzeria indica Hirst.

Proc. Zool. Soc. London, 1926, Part III, pp. 825-826.
Host:—Found in soil.
Habitat:—Collected at Coimbatore.

The adult mites are red in colour. The four tufts of velvety red hairs which cover the bare back of the mite are erected when disturbed. They are found wandering about in the soil just after the rains.

FAMILY CHEYLETIDÆ.

GENUS *CHEYLETUS*.

Cheyletus fortis Oudms.

Host:—Predaceous on Tyroglyphid mites found on stored potatoes (*Solanum tuberosum*).
Habitat:—Collected at Coimbatore.

Eggs of these mites are pale-white in colour, and as many as 64 eggs have been noted in the case of a single female. The mother is always found near the eggs jealously guarding them.

GENUS *CHELETOMORPHA*.

Cheletomorpha venustissima C. L. Koch.

Oudemans, *Zool. France* (1906), pp. 144–153.
Host:—Predaceous on Tyroglyphid mites found on oranges.
Habitat:—Collected at Coimbatore.

FAMILY TARSONEMIDÆ.

GENUS *PEDICULOIDES*.

Pediculoides ventricosus Newp.

Murray, *Economic Entomology, Aptera*, p. 290.
Trans. Linn. Soc., XXI, 1853, p. 95.
Banks, Nathan. *Report No. 108 of the United States Department of Agriculture*, p. 106.
Miller, *Bulletin, 386, Ohio Agrl. Expt. Stn.*, p. 147.
Webster, *Ann. Ent. Soc. Amer.*, Vol. III, 1910, pp. 15–39.

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Host:—*Nephantis serinopa* caterpillars, and pupæ of *Perisierola sp.* (Family Bethylidæ) a parasite on the above-mentioned caterpillar.
Habitat:—Collected at Coimbatore, Mangalore, and Calicut. Hagari (Bellary Dt.) on Chilo caterpillars.

In the course of rearing parasites for Mangalore the writer had to contend against this mite. The mites suck the caterpillars and as a result cause them to shrivel up and thus hinder parasite breeding work. In Egypt these mites are reported to act as a check on the Pink Bollworm (*Platyedra gossypiella*).

Genus *Tarsonemus*.

Tarsonemus kirchneri Kramer.

Kramer, *Arch. f. Naturg. Jahrg.*, 42, Vol. 1, p. 199, pt. VIII (1876).
Berlese, Acari. Myrippoda, etc., in *Italia rep Fasc.* 75, No. 3 (1895).
Host-plant:—On leaves of *Ipomœa staphylina* which had galls on them caused by Eriophid mites.
Habitat:—Collected at Coimbatore.

Family TYROGLYPHIDÆ.

Genus *Tyroglyphus*.

Tyroglyphus longior Gervais.

Murray, *Ec. Ent. Aptera*, pp. 270–274.
Michael, *Walckenaer. Ins. Apt.* (1844), Vol. 3, p. 262.
Host:—Found on decaying oranges (*Citrus aurantium*) along with certain Gamasid mites.
Habitat:—Collected at Coimbatore.

The same mite, according to Nathan-Banks, occurs in great abundance in barns and mills in Canada and the Northern States.

Family PARASITIDÆ (GAMASIDÆ).

Genus *Anychus*.

Anychus latus Can. and Fanz.

Hirst, *Proc. Zool. Soc. London*, 1923, Part IV, pp. 991–993.
Host-plant:—Cotton leaves (*Gossypium* sp.).
Habitat:—Collected at Coimbatore.
Both male and female mites are pale-yellow in colour.

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FAMILY ERIOPHYIDÆ (PHYTOPTIDÆ).

GENUS *ERIOPHYES*.

Eriophyes (*Phytoptus*) *carinatus* Green.

Fletcher, '*Some South Indian Insects*', pp. 545-546.
Host-plant:—Tea leaves (*Camellia thea*).
Habitat:—Nilgiris.

Mr. R. D. Anstead has recorded this species as a pest of tea on the Nilgiris. Adult mites are dull purple in colour and have five ridges of white waxy material along the back. They feed on both the surfaces of the leaves.

Eriophyes cernius Massee.

Host-plant:—Found inside the flower galls of *Zizyphus jujuba*.
Habitat:—Collected at Coimbatore.
This species has been recorded from Sudan in 1926.

Eriophyes gastrotrichus Nal.

Host-plant:—Found inside the galls of *Ipomœa staphylina* leaves and stem.
Habitat:—Collected at Coimbatore and in Travancore.
This species has been recorded from Java in 1918.

In conclusion the writer wishes to place on record his thankfulness to Messrs. S. Hirst of the British Museum, and A. M. Massee of the Research Institute, East Malling, Kent, for their kindness in identifying specimens, and Mr. Y. Ramachandra Rao, Government Entomologist, for valuable advice given.

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Jute in Early British Days.

By J. C. Sinha.

The origin of the word 'jute' is lost in obscurity. At a meeting of the Cambridge Philological Society in 1879, Prof. Skeat derived the word from Sanskrit *juta* "a less usual form of *jata*, meaning, first, the matted hair of an ascetic; secondly, the fibrous roots of a tree, such as the banyan, . . . and thirdly, any fibrous substance".[1] That the name of an Indian product finds its original in Sanskrit seems quite natural. But it is rather surprising that jute is not known by that name or any similar name in Bengal where about 90 per cent. of the fibre is still produced.

As is well known, the Bengali name for the fibre is *pat*. The derivation of this word does not throw any light on the above question, for *pat* is derived from Sanskrit *patta*, meaning a "shining fibre", probably silk, although in the Mahabharata, *kitajam* (i.e. insect-produced, evidently silk) is distinguished from *pattajam*. Prof. J. C. Ray, however, writes that "this name (*pat*) was given to jute on account of its resemblance with silk in colour and lustre. In Western Bengal, where mulberry silk and jute are both grown, the former is known as *tut pat*—the mulberry *pat* and the latter as *gacch pat*—the vegetable *pat*. In some districts such as Nuddia, jute is known as *koshta*, which is derived from Sanskrit *kosha*—the cocoon, implying again its resemblance with silk."[2] Right up to the end of the eighteenth century, the word 'jute' had not yet taken root and the word *pat* was more frequently used in the commercial records of the English East India Company.

How the former word came to supplant the latter, still remains a mystery. Mr. H. C. Kerr suggested in 1873 that the first use of the word jute in English was due to Dr. Roxburgh who, on the death of Colonel Kyd in May, 1793, succeeded him as the Superintendent of the Company's Botanical Garden at Shibpur, near Calcutta.[3] According to Mr. Kerr,

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[1] *The Academy* (London), December 27, 1879, p. 463.

[2] Prof. J. C. Ray's paper on the Textile Industry in Ancient India in the *Journal of the B. & O. Research Society*, Vol. III, Part II (1917). Prof. Ray finds the earliest mention of *pat* and of its use in making ropes in *Srikrishna-kirtan*, a Bengali work of the fourteenth century. The jute plant is called there *Nalicha* which was steeped in water for 36 hours. It was then taken out and *pat* was extracted, dried and twisted into ropes.

[3] H. C. Kerr—*Report on the Cultivation of, and Trade in, Jute in Bengal* (1874, p. 19).

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jute is known in Orissa as *jhot* and his inference is that Dr. Roxburgh got the word from his Uriya *mallies* in the Company's Botanical Garden. "If it can be shewn," writes Mr. Kerr, "that the word had got currency before the time of Dr. Roxburgh, still the fact of extensive roperies and canvas manufactories of the English factories on the seaboard of Orissa would point to the vernacular of that country as the source of the word".

The writer of this paper has been informed by the Director of Agriculture, Behar and Orissa, that even at the present time the vernacular names for *Corchorus olitorius* or *capsularis* in the district of Cuttack are *Nalita*[1] and *Nalita Jhota*. In the district of Balasore, *Corchorus olitorius* and *capsularis* are respectively called *Madhura Nalita* and *Pita Nalita*. The latter is also called *Jhota* in some parts of North Balasore. According to Messrs. Burkill and Finlow, in the Contai subdivision of the contiguous district of Midnapore, *C. capsularis* is called either *koshta* or *jhot-pat*.[2]

It has however been suggested that the word 'jute' is derived from Hindi *jhut* or false.[3] There was a tradition in Calcutta that jute was originally brought into the market for the purpose of adulteration with hemp and hence it was called *jhut* or false hemp. It is true that in some of the early records of the East India Company, e.g., in the Commercial Letter from Bengal, dated April 27, 1792, jute is described as "a species of hemp", but even in those days the distinction between hemp and jute was not unknown to the servants of John Company. It appears from Roxburgh's botanical history of hemp and flax plants in Bengal,[4] dated December 23, 1794, that the fibre of the plant '*Corchorus olitorius*' was at the time "known in Calcutta by the name of jute". In the Proceedings of the Board of Trade in Bengal, dated April 21, 1801, hemp is described as *Cannabis sativa*, *sunn* as *Crotalaria juncea* and *pat* as *Corchorus olitorius*. In view of this, the derivation of the word from Hindi *jhut* can hardly be maintained.

That the word 'jute' is derived from its Uriya name, which, in its turn, is based on Sanskrit *jata*, seems quite probable, but Roxburgh was not the first to introduce the word in the English language. As Sir Richard Temple pointed out

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[1] This is also the vernacular name of the jute plant in some districts in Bengal.

[2] Burkill and Finlow—*The Races of Jute* (Agricultural Ledger, 1907—No. 6).

[3] *The Academy*, January 31, 1880.

[4] In April, 1929, the present writer found this important manuscript which throws so much light on jute cultivation in Bengal in 1794, among the Home Miscellaneous Records of the India Office, London. It is strange that it had not been consulted by Royle, Drury or any subsequent author.

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in 1899,[1] the word 'jute' appears as early as 1746, when the captain of the ship Wake noted in his log that he had sent on shore "60 bales of gunney (*sic*)[2] belonging to the Company with all the jute rope". This is not the only instance of the use of the word before Roxburgh's appointment in Bengal. Seventeen years before his arrival, we find the President and Council at Fort St. George in their letter dated September 22, 1776, to the Government at Fort William, asking for "a supply of gunnies and jute rope" according to the following indent :—

"Gunnies 16 covs. (i.e. covids) long and ¾ broad	..	10,000 pieces
Jute rope well twisted	..	15 candy
Jute twine well twisted	..	5 candy"[3]

During the period from March 1791 to September 1792, the fibre called 'jute' is referred to at least six times in the records of the English East India Company.

Did the term 'jute' mean in those days *Corchorus* or any other kind of fibre? Sir David Prain said in his oral evidence before the Royal Commission on Agriculture in India that "the real jute was the fibre of *Hibiscus cannabinus* but now you have got to call it Bimlipatam jute to distinguish it from the thing which usurped the name jute".

When the present writer saw Sir David in London on April 29, 1929, the only evidence the latter could give in support of the above statement, was as follows :—

In February, 1903, Mr. Wigglesworth of Messrs. Wigglesworth and Co. Ltd., the well-known London firm of importers and distributors of fibres, obtained sample seeds of various kinds of *Crotalaria juncea* from Coconada and Warangal in the Madras Presidency. Of these, one sample which was said to contain jute seeds, when planted by Sir David in the Royal Botanical Garden at Shibpur, yielded a crop of *Hibiscus cannabinus*. This is hardly a conclusive evidence in support of the view that the term 'jute' was originally applied to *Hibiscus* fibre.

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[1] *J.R.A.S.*, 1900, p. 158. See also *Indian Antiquary*, September, 1901.

[2] The earliest apparent reference to 'gunnies' is in the *Home Miscellaneous Records* (I.O.), Vol. IV, p. 4, where there is a list of "goods remaining on hand of several ware-houses" before August 30, 1671. Among the goods are "guiny stuffes" valued at 5 shillings. Birdwood in his *Report on the Old Records of the India Office* observes that this 'guiny' was jute, the fibre of *corchorus capsularis* and *corchorus olitorius* used chiefly in the manufacture of *goni* or sacks and sacking. For other early references to the term '*gunny*' from 1676 onwards see the *Indian Antiquary*, September, 1901.

[3] Board of Trade—Commercial Proceedings from September to December, 1776 (Bengal Secretariat Records).

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As has already been said, the word 'jute' first appears in the log of ship Wake in 1746. It is not known whether the gunny and the jute rope sent on shore from this ship, were made of the fibre of *Hibiscus cannabinus*. As the ship was proceeding from Calpie on the Hughly to South India, we may however infer that this gunny and jute rope had been manufactured in Bengal. It appears from a study of the Company's records that during the latter half of the eighteenth century, the great bulk of the fibre, then called 'jute', was produced in Bengal. It was used there in the manufacture of gunnies and gunny bags, of which a fair amount was exported to foreign countries as well as to other parts of India.

The only evidence from the Company's records towards the close of the eighteenth century which seems to support Sir David's contention is the report with the coloured drawings of different fibre plants, sent by Mr. Atkinson, Resident at Jungypore, with his letter dated November 21, 1792, to the President and Members of the Board of Trade, Fort William.[1] Photographs taken from Atkinson's drawings, are reproduced at the end of this paper. (See Plates 2 to 5.)

According to this report, four kinds of fibre plants were cultivated in the district of Murshidabad in those days. The first was called *ghore sun*. Some of this species, we are told, was "produced in the country to the westward of the Cossimbazar river" but the major part of the fibre was imported into the district from Dinajpur, Purneah, Tirhoot and other neighbouring districts. This *ghore sun*, as it is evident from the picture of plant in Plate 1, was *Crotalaria juncea*.

The second species of plants called *Sanchi paat*, was found in villages or near the houses of the inhabitants. Its leaves and tender shoots were used by the people as an article of food. Its fibre was superior to *ghore sun* but the outturn was so small as to defray barely the expenses. It was grown in the district, mainly as vegetable and its cultivation was not common in other parts of the country. It did not grow to a height above four feet. It appears from the picture of the plant with its round pods (see Plate 3) that it was probably a species of *Corchorus capsularis*. Mr. Kerr refers in his Report (p. 15) to *sanchiranga pat* of the 24-Pergannahs. According to Messrs. Burkill and Finlow, the name *sanchi pat* is applied in the 24-Pergannahs to a species of *Corchorus capsularis*.[2]

The third kind of fibre plant was *coochmurdan paat*. It required good soil, not liable to be flooded in the rains. The crop was fit for cutting towards the end of August or the beginning of September. In point of quality this fibre was inferior to European hemp, "coarser, less strong and more

1 *Home Miscellaneous Records*, Vol. 375, pp. 311–322.
2 Burkill and Finlow—*The Races of Jute*.

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liable to decay on exposure to the weather". Probably this plant belonged also to *corchorus* variety. According to Mr. Kerr, one of the vernacular names of jute fibre in the district of Bogra was *Kochmurdan pat.*[1] Messrs. Burkill and Finlow also write "Kuchmadan, applied in Bogra and western Mymensingh to Race No. 20 of Corchorus capsularis and in Murshidabad and Nadia to Race No. 5 of C. olitorius."[2]

The fourth kind of fibre plant, called *Amleah paat*, was "in the most general use throughout the country". But the quantity grown in the district of Murshidabad at the time was just sufficient for local consumption. It was inferior to European hemp, for although it was strong yet it was very coarse and could not be worked up "into any manufacture finer than gunnies". The picture of this plant reproduced from Atkinson's report (see Plate 5) has much similarity with *Hibiscus cannabinus*. Messrs. Burkill and Finlow also write that "in the district of Malda, as in Purneah, jute is called *Patwa*, and Hibiscus cannabinus is called *Amla patwa*".

If *Amleah pat* is thus identified with *Hibiscus cannabinus* it may be said that this was the most extensively cultivated fibre plant in Bengal in 1792 and was then used in the manufacture of gunnies. The inference is that this fibre rather than that of *Corchorus olitorius*, was called 'jute' in those days. But the evidence from the East India Company's records of the period is against this view.

Within two years of the despatch of Atkinson's report, Roxburgh wrote "A botanical history of the (*paat* and *dooncha*) hemp and flax plants of the Bengal".[3] It was addressed to the Court of Directors on December 23, 1794, and contained coloured drawings of *Corchorus olitorius* Linn, *Corchorus capsularis* Linn, *Corchorus fuscus* and *Aeschynomene cannabina* of Konig (*Dooncha* of the Bengalese), with a graphic description of these plants.

According to this report, *Corchorus olitorius* was "the Bhunghee[4] or fine paat of the Bengalese". It was a well-known annual plant, found growing wild in various parts of India. It was much cultivated in Bengal in those days "for the fibres of its bark, known in Calcutta by the name of jute". The leaves of this plant were universally used as an esculent pot-herb, by both Hindus and Muhammadans. They were a

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[1] H. C. Kerr—*Report on the Cultivation of, and Trade in, Jute in Bengal*, p. 16.

[2] Burkill and Finlow—*The Races of Jute*. [3] See n. 4 on p. 150.

[4] 'Bhunghee', as Mr. Kerr suggests in his Report, p. 14, is probably derived from *bhang*, a narcotic derived from *Cannabis sativa*. This plant is cultivated in Bengal, not for its fibre (which is real hemp with which jute was sometimes confused in the eighteenth century) but for *bhang*. "Bhunghee paat" might have meant jute resembling hemp. *C. olitorius* is still called *bogi pat* in some parts of Bengal.

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favourite salad among the Jews, hence the name Jew's Mallow. *Corchorus capsularis* was the "Gheenaltha paat of the Bengalese". "This species", writes Dr. Roxburgh "is also annual. I have found it in various parts of India, but in Bengal it is sometimes cultivated, not only for its flax but for its leaves. They are reckoned more wholesome than those of C. olitorius .... There is a variety of this species called teetha or teeto [1] paat by the natives, which they say, is never tinged with red, but is green in every part." It appears from the coloured drawings of *Bhunghee paat* (*C. olitorius*) and *Gheenaltha paat* (*C. capsularis*) in Roxburgh's botanical history that both the plants had green leaves and yellow flowers, but the former had green stem and petioles while the stem, petioles and veins in the leaves of the latter were reddish in colour. Photographs taken from these drawings which are reproduced at the end of this paper (see Plates 6 and 7) show that the jute plants, cultivated in Bengal in 1794, are identical with the plants which now produce the fibre.

Atkinson's remark that *Amleah pat* was "in most general use throughout the country" was most probably applicable to the district of Murshidabad only. We search in vain for a similar statement in the report "relative to hemp and flax" sent on September 26, 1792 to the Board of Trade in Calcutta, by Mr. J. Taylor, Resident of the Dacca Factory. In this report, he mentions only two kinds of fibre plants, viz., *sun paut* and *coosta paut*. The former is called "*goor sun*" in his secret letter of June 18, 1794, and the latter is described there as "*coosta paut* or jute". This '*coosta paut*' was most likely *Corchorus* and not *Hibiscus* fibre.

It appears also from the Proceedings of the Board of Trade in Bengal of April 21, 1801, that *merty paat* (*Hibiscus cannabinus*) was one of the many vegetable fibres "occasionally used" in Bengal for cordage, etc. If it was extensively cultivated in 1792, as suggested by Atkinson, it was not likely that it would be occasionally used only nine years later.

We read in these Proceedings of the Board of Trade, dated April 21, 1801, that the plants which were cultivated for cordage and of which by far the greatest use was made at the time were *Crotalaria juncea* or *sunn* and *Corchorus olitorius* or *pat*. *Pat* was used in making fishing nets, twine, canvas, coarse paper, bullock bags, ropes and cordage, in short, for all the purposes for which *sunn* was used. Though *sunn* was a stronger fibre than *pat*, the latter was more widely used on account of its comparative cheapness. This is true also at the

[1] According to Mr. Kerr (see his Report, p. 15), *tita* or *teeta pat* was one of the vernacular names of jute in districts of Midnapore, Howrah and the 24-Pergannahs in 1873. Even at the present time, *C. Capsularis* is called *Tita pat* in the 24-Pergannahs.

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present time. Jute is now the world's cheapest fibre in commercial use, and, in quantity grown, is second only to cotton.

By the beginning of the 19th century, the word *pat*, unless preceded by a qualifying word, came to denote *C. olitorius*,[1] the fibre of which, as has already been said, was known as jute in Calcutta as early as 1794. It is interesting to note that the fibre of *C. capsularis* was not yet called jute. In his "essay on the culture, properties and comparative strength of hemp, sunn, jute, etc." sent to the Board of Trade, Fort William, with his letter dated the 31st January, 1801, Roxburgh, however, wrote that the fibre of *C. olitorius* was called jute by the Bengalese and the fibre of *C. capsularis* (*ghee nalta pat*) was called "nalta jute" by the same people.[2] The word *nalta* appears to have been dropped shortly after, and both kinds of fibre came to be called jute.

Thus in his *Hortus Bengalensis*, published in 1814, Roxburgh gives the following account of the plants of *Corchorus* variety, grown in the Company's Botanical Garden at Shibpur:—

Variety.	Vernacular name.	Description of plant.
Corchorus olitorius (green variety)	*Pat*	Annual rainy season plant.
Corchorus olitorius (reddish variety).	*Bun Pat* ..	Annual rainy season plant.
Corchorus capsularis (reddish variety).	*Ghinalita Pat* ..	Annual rainy season plant.
Corchorus capsularis (green variety).	*Koshta, Tittha Pat*	Annual rainy season plant.
Corchorus[3] *fuscus*	....	Annual rainy and cold season plant.
Corchorus fascicularis ..	*Junglee pat* ..	Annual cold season plant.

[1] There are frequent references in the Company's records, leading to this conclusion. Thus, the Commercial Resident at Chittagong wrote to the Board of Trade, Calcutta, on June 2, 1801, "Of the *Corchorus olitorius* or *paut* little is also cultivated". The Resident at Rangpore wrote on June 4, 1801, to the Board of Trade "the *paut* (*Corchorus olitorius*) has had a much more extensive cultivation in this district".

[2] Proceedings of the Board of Trade, Fort William, 12th September, 1801. (Bengal Secretariat Records.)

[3] According to Roxburgh's *Flora Indica*, *C. fuscus* was never cultivated and its Bengali name was *Titta pat*.

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C. olitorius (green variety) and *C. capsularis* (reddish variety), as Roxburgh writes in the above book, were extensively cultivated in Bengal, "for the fibres of their bark, *there called jute* (italics are ours), of which coarse sackcloth for rice bags, cordage, twine, etc." were manufactured.[1]

Thus the term 'jute' which was first applied to the fibre of *C. olitorius*, came to denote the fibre of *C. capsularis* also, more than a century ago. At present, the great bulk of jute grown in Bengal, belongs to this latter variety.

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1 Roxburgh—*Hortus Benaalensis* (Serampore, 1814, p. 42).

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Ghore Sun

(From Atkinson's drawing in 1792, Home Mis. Records, I.O.)

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Sanchee Paat

(From Atkinson's drawing in 1792, Home Mis. Records, I.O.)

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Cooch Mardan Paat

(*From Atkinson's drawing in 1819, Mss. Records, I.O.*)

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Amleeah Paat

(*From Atkinson's drawing in 1792, Home Mis. Records, I.O.*)

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No. 901. *Corchorus olitorius* Linn.

(From Roxburgh's drawing in 1794, Home Mis. Records, I.O.)

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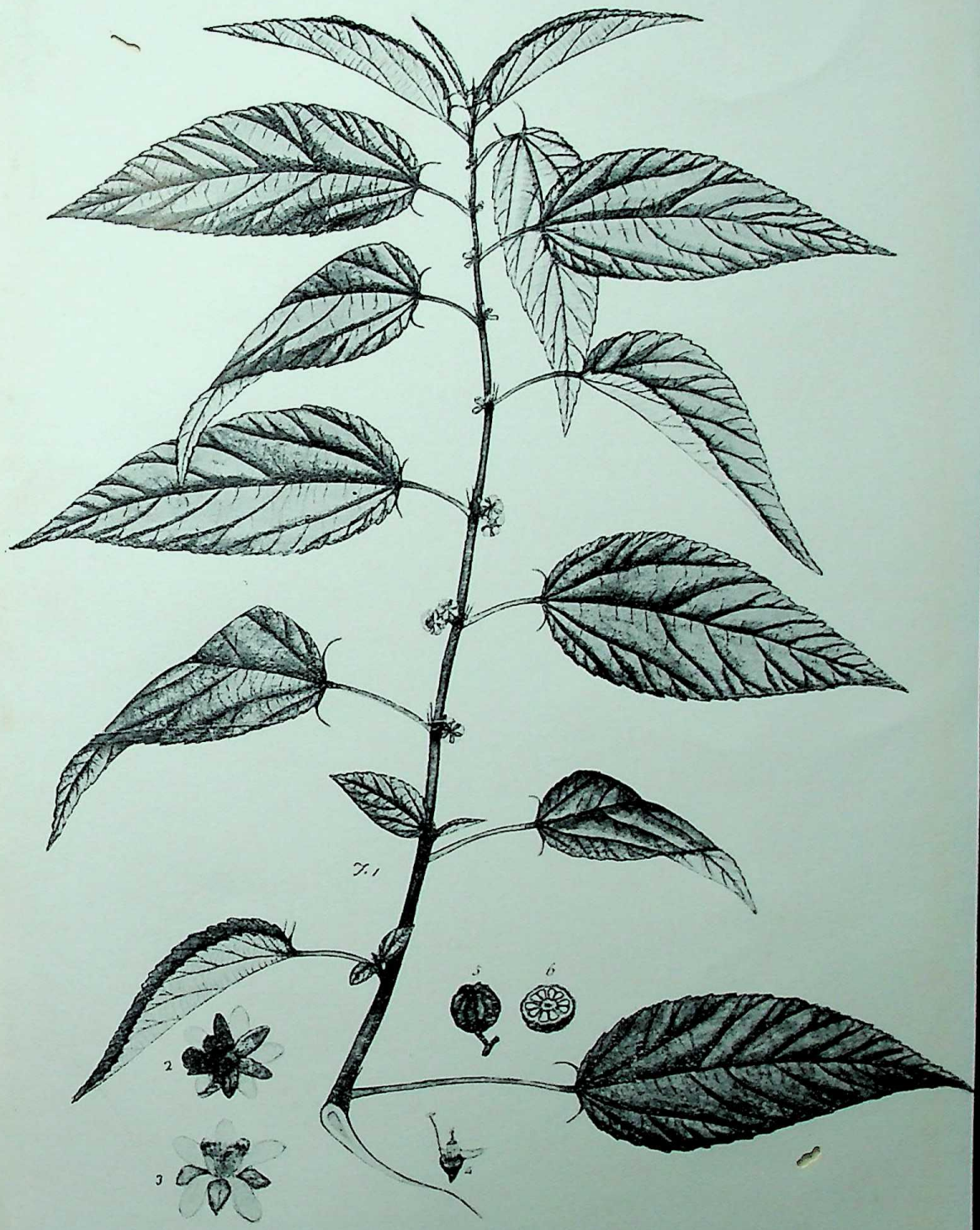
No. 902. *Corchorus capsularis* Linn.



(From Roxburgh's drawing in 1794, Home Mis. Records, I.O.)

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The Chauhāns of Nāḍōl and Jālōr.

By R. R. Halder.

In a previous issue[1] of this Journal, I have written some accounts of the Chauhāns of Sāmbhar, Ajmer, and Ranthaṁbhōr.

In this paper I wish to write a brief note on the Chauhāns of Nāḍōl and Jālōr, who sprang from the main line of the Chauhāns of Sāmbhar.

A. The Chauhāns of Nāḍōl.

1. **Lakshmaṇa.** He was the originator of this line. He was a son of the Chauhāna Vākpatirāja I of Sāmbhar.[2] As has already been mentioned, he established his capital at Nāḍōl and thus became the founder of the Nāḍōl line of the Chauhāns. In Rājputānā, he is known by the name 'Rāo Lākhaṇsī'. He was a very brave ruler. Colonel Tod says about him that he "collected transit dues from the further gate of Anhilwārā and levied tribute from the prince of Chitor".[3] This seems to be exaggeration; for the contemporary princes of Lakshmaṇa at Aṇahilvāḍā and Chitor were Mūlarāja I (S. 1017–52=A.D. 960–95) and Śakti Kumāra (S. 1034=A.D. 977) or his son Ambāprasāda respectively, who were independent rulers.[4] His inscriptions are dated S. 1024 and S. 1039 (A.D. 967 and 982).

2. **Śōbhita.** He was the son of Lakshmaṇa. Also called Sōhiya, Sōbhita, and Sōhī. He is said to have deprived the Paramāra ruler of Ābū (probably Kṛishṇarājā I or Dharaṇīvarāha) of his glory.[5]

3. **Balirāja.** He was the son of Śōbhita. He defeated an army of the Paramāra king Muñjarāja (Vākpatirāja II, S. 1031–50, A.D. 974–93) of Mālwā.[6] This defeat of Muñjarāja had probably taken place about the time when Mewāṛ was attacked by him in the reign of its ruler Śakti Kumāra.

4. **Vigrahapāla.** Was the paternal uncle of Balirāja and brother of Śōbhita.[7]

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1 *J.A.S.B.* (New Series), Vol. XXV, 1929, p. 185 f.
2 *Ep. Ind.*, Vol. IX, p. 68, vv. 2–3.
3 Tod's *Rajasthan* (Oxford edition), Vol. II, p. 808.
4 It was Vākpatirāja II of Sāmbhar, who had killed Ambāprasāda of Mewāṛ (*J.A.S.B.*, Vol. XXV, p. 190).
5 *Ep. Ind.*, Vol. IX, p. 71.
6 *Ibid.*, Vol. IX, p. 71.
7 *Ibid.*, Vol. IX, p. 67.

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5. **Mahendra.** He was the son of Vigrahapāla. Also called Mahindu. He was harassed by the Chaulukya king Durlabharāja (S. 1066–78, A.D. 1009–21) of Gujarāt.[1] He held a big *svayaṁvara* for the marriage of his sister Durlabhadevi, who chose Durlabharāja for her husband. Another sister named Lakshmī was married to Durlabha's younger brother Nāgarāja. The hostilities between the Chauhāns and the Chaulukyas thus ended temporarily in matrimonial alliance. The son of Mahendra was Aṇahilla and also Aśvapāla according to Sūndhā Hill inscription, dated S. 1319. According to this inscription,[2] too, Aśvapāla and his son Ahila are said to have succeeded Mahendra one after another, but in the Nāḍōl plates of Ālhaṇadeva and Kīrtipāla, which are dated about a century back,[3] these names are omitted.

6. **Aṇahilla.** Was the son of Mahendra. He took Sāmbhar, defeated Bhīmadeva I (S. 1078–1120, A.D. 1021–63) of Gujarāt, and killed Sāḍha, a general of the Paramāra king Bhōja (S. 1076–99, A.D. 1019–42), of Mālwā. He also fought with the Muḥammadans, probably under Maḥmūd of Ghaznī, who passed by the way of Nāḍōl at the time of his delivering an attack on Sōmanātha in A.D. 1025.[4] Aṇahilla thus seems to be a contemporary of Chauhāna Gōvindarāja II of Sāmbhar, who is also said to have fought with Maḥmūd.

7. **Bālaprasāda.** He was the son of Aṇahilla. He forced Bhīmadeva I of Gujarāt to release from prison Kṛishṇadeva (Kṛishnarāja II, S. 1117–23, A.D. 1060–67), the younger son of Dhandhuka, the Paramāra ruler of Ābū.

8. **Jindurāja.** He was the brother of Bālaprasāda. Also called Jindarāja, Jendrarāja, Jendrapāla and Jesaladeva. He gained a victory against his enemies at Sāṇderāv in Jodhpur State. He had three sons named Pṛithvīpāla, Jōjalla, and Āsarāja. His inscription is dated S. 1132 (A.D. 1075).

9. **Pṛithvīpāla.** Was a son of Jindurāja. He defeated an army of Sōlaṅkī king Karṇa (S. 1120–50, A.D. 1063–93), son of Bhīmadeva I of Gujarāt, who was contemporary with his predecessors Aṇahilla and Bālaprasāda. He erected a temple of Śiva at Nāḍōl, which was called Pṛithvīpāleśvara after him.

10. **Jōjalladeva.** He was the younger brother of Pṛi-

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[1] See also *Ep. Ind.*, Vol. XI, p. 68.

[2] *Ep. Ind.*, Vol. IX, p. 70. Probably Ahila is mistaken for Aṇahilla and Aśvapāla for Vigrahapāla.

[3] *Ibid.*, pp. 63 and 66. See also *Ep. Ind.*, Vol. XI, p. 305.

[4] *Ep. Ind.*, Vol. XI, p. 68. Aṇahilla defeated Bhīmadeva probably at the time when the latter sent his army against Dhandhuka of Ābū and killed Sāḍha probably when Bhīmadeva attacked and fought, against Bhojadeva of Mālwā [see R. B. G. H. Ojha's *History of Rājputānā* (in Hindi), p. 216]. Thus it appears that he first remained hostile towards Bhīmadeva, but later on turned an ally to him.

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thvīpāla. Also called Yōjaka. He occupied Aṇahillapura (Aṇhilvāḍa).[1] His two inscriptions are dated in the same year, S. 1147 (A.D. 1090). He, too, built a temple at Nāḍōl, and named it after him as Jōjaleśvara.

11. **Āsarāja.** Was the younger brother of Jōjalladeva. Also called Aśvarāja and Āśārāja. He was a different person from Āśvāka, a minister of king Jayasiṁha of Gujarāt.[2] Up to the time of Jōjalladeva, the Chauhāns of Nāḍōl were mostly at war with the Sōlaṅkīs of Gujarāt, but after the accession of Siddharāja Jayasiṁha (S. 1150–99, A.D. 1093–1142), it appears that the Chauhāns of Nāḍōl under their ruler Āsarāja felt the power of that mighty Sōlaṅkī king and acknowledged the superiority of the latter. Consequently, Āsarāja rendered assistance to him (Jayasiṁha), when he carried his arms against Naravarmā of Mālwā, though later on he became hostile towards him. Āsarāja seems to have ruled up to S. 1172 (A.D 1115), i.e., the period when his son Kaṭukarāja was still a *Yuvarāja*.[3] The discovery of an inscription[4] dated S. 1176 (A.D. 1119) of Ratnapāla, son of Āsarāja's brother Pṛithvīpāla, in which Ratnapāla is said to have been the ruler of Nāḍōl, shows that Nāḍōl was for some time being ruled over by Ratnapāla after Āsarāja. Similarly, the discovery of Rāyapāla's inscription,[5] dated Saṁvat 1198 (A.D. 1141), shows that, after Ratnapāla, his son Rāyapāla temporarily became the ruler of Nāḍōl. Rāyapāla is also said to have ruled at other part of Mārwāṛ (Nāḍlāi and its vicinity) in his inscriptions, dated from S. 1189–1202 (A.D. 1132–1145).[6] The inscription,[7] dated Siṁ. S. 31 (S. 1200=A.D. 1143), shows that, after Rāyapāla, Nāḍōl was also ruled over by Kaṭukarāja, though for a very short time. After the rule of these princes, the Chauhāns ceased to be the rulers at Nāḍōl for some time, and the capital was being ruled over by the Sōlaṅkī Kumārapāla through his general Vaijāka or Vaijalladeva, as is apparent from the inscriptions dated Ss. 1209, 1210, 1213, and 1216.[8] Thus, it is clear that Mārwāṛ was practically at this period under the Sōlaṅkī Kumārapāla of Gujarāt.

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[1] Probably he defeated Karṇa, who was also defeated by his predecessor Pṛithvīpāla.

[2] See also *Ep. Ind.*, Vol. XI, p. 69.

[3] *Ep. Ind.*, Vol. XI, p. 30.

[4] *Ibid.*, p. 304. [5] *Ibid.*, p. 37.

[6] *Ep. Ind.*, Vol. XI, pp. 34–42.

[7] *Ep. Ind.*, Vol. XI, p. 34. The accession to the throne of Nāḍōl, however, of Ratnapāla, Rāyapāla, and Kaṭukarāja (Kaṭudeva) is not corroborated by the inscriptions of Ālhaṇadeva, Kīrtipāla, and Chāchigadeva (*Ep. Ind.*, Vol. IX, pp. 63–70), hence they are omitted in the above list. It may also be noted that the absence of discovery of Kaṭukarāja's inscription at Nāḍōl, as also the succession of Ālhaṇadeva after Āsarāja, show that Kaṭukarāja did not rule at Nāḍōl for a long time and perhaps died early.

[8] *Ep. Ind.*, Vol. XI, p. 70.

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Āsarāja was a very charitable ruler. He had two more sons Ālhaṇa and Māṇakrāya, of whom the former succeeded his father to the throne of Nāḍōl and the latter became the originator of the Chauhāns of Būndī and Kōṭāh in Rājputānā. The inscription of Āsarāja is dated S. 1167 (A.D. 1110).

12. **Ālhaṇadeva.** He was a son of Āsarāja. Also called Āhlādana. He obtained possession of his paternal dominion through the favour of his overlord Kumārapāla (S. 1199–1230, A.D. 1142–73), sometime between S. 1216 (A.D. 1159) and S. 1218 (A.D. 1161), i.e., between the last date of Vaijalladeva's inscription in Māṛwāṛ, and the first date of Ālhaṇa's inscription at Nāḍōl. He rendered assistance to Kumārapāla, when the latter sent his army against Sausara (Samara), king of Saurāshṭra (Sōraṭh), and proved instrumental in securing a victory for him. For this allegiance to the Chaulukya king he suffered at the hands of the Chauhāna emperor Vigraharāja IV (Vīsaladeva) of Ajmer, who made Nāḍōl 'a bed of reeds', and Jālōr (another town) 'a city of flames'. He married Ānnalladevī, a daughter of Sahula of the Rashṭrākūṭa family then reigning at Hathuṇḍi in Mārwāṛ. He had three sons, namely, Kelhaṇa, Gajasiṁha, and Kīrtipāla. His inscriptions are dated S. 1209 (A.D. 1153), S. 1218 (A.D. 1161), and S. 1220 (A.D. 1163).

13. **Kelhaṇa.** Was a son of Ālhaṇadeva, and succeeded his father between S. 1220 and 1221 (A.D. 1163 and 1164). He, too, appears to have remained subordinate to Kumārapāla and Bhīmadeva II of Gujarāt, and is said to have helped the latter at the time of Muḥammad Ghūrī's attack on Aṇhilavāḍā. He, accompanied by his brother Kīrtipāla, fought against the Muḥammadan king in A.D. 1178 at Kāshrada (Kāyadrān) at the foot of Mt. Ābū. He defeated the Yādava king Bhillama of Devagiri. His queens were Mahibaladevī and Jālhaṇadevī. His daughters Gigādevi and Śṛiṅgāradevī were both married to the Paramāra ruler Dhārāvarsha of Ābū, of whom Gigādevī was the chief queen.[1] His inscriptions are dated from S. 1221 to S. 1249 (A.D. 1164–92).

14. **Jayatasīha.** Was the son of Kelhaṇa. A few years after his accession, Nāḍōl was attacked by the Muḥammadans under Quṭub-ud-Dīn Ībak and taken by them. The rule of the Chauhāns thus ceased again for some time, though they continued to rule in other parts of Mārwāṛ. His inscriptions are dated S. 1239 (A.D. 1182) and S. 1251 (A.D. 1194), the former representing him as a *Yuvarāja*.

15. **Śāmantasiṁha.** He seems to have succeeded Jayatasīha between S. 1251 and 1256 (A.D. 1194 and 1199). His inscriptions[2] are dated S. 1256 and 1258 (A.D. 1199

[1] Rājputānā Museum Report, 1909-10, p. 8.
[2] *Ibid.*, p. 9.

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and 1201). After Sāmantasiṁha, the kingdom of Nāḍōl was amalgamated to that of Jālōr by Kīrtipāla, brother of Kelhaṇa, who had made it his capital town. The line of the Chauhāns of Nāḍōl thus ended with Sāmantasiṁha, who was the last ruler of the branch.

B. The Chauhāns of Jālōr.

16. **Kīrtipāla.** While Kelhaṇa was ruling at Nāḍōl, his younger brother Kīrtipāla wrested the fort of Jālōr from the Paramāras of Jālōr (Jāvālipura), and established his capital there.[1] The hill on which the fort of Jālōr stood was locally known as Sōnalagaḍh (from the Sanskṛit *Suvarṇagiri, Kanakāchala*, Kāñchanagaḍha, etc.), after which the Chauhāns of Jālōr were called as Sōnagarā Chauhāns. Kīrtipāla thus founded the line of Sōnagarā Chauhāns, and was thus the originator of the Jālōr branch of the Chauhāns. In Rājputānā, he is also known as 'Kītū'. He was a very brave ruler. His defeat of Shihābu-d-dīn Ghurī has already been referred to. He defeated a chief named Āsala of Kirāḍu in Mārwāṛ, and extended his conquests as far as Mewāṛ. He defeated Rāwal Sāmantasiṁha of Chitor and wrested the fort from him.[2] He had three sons, viz., Samarasiṁha, Lākhaṇapāla, and Abhayapāla and one daughter named Rūdaladevī.

17. **Samarasiṁha.** He was a son of Kīrtipāla. He strengthened and fortified the fort of Jālōr. His daughter Lilādevī was married to Bhīmadeva II (S. 1235–98, A.D. 1178–1241) of Gujarāt. He had two sons, viz., Udayasiṁha and Mānasiṁha, of whom the former succeeded his father, and the latter founded the branch of the Chauhāns of Sirōhi. He was a charitable ruler, and weighed himself against gold. He founded the city of Samarapura. His inscriptions are dated Ss. 1239 and 1242 (A.D. 1182 and 1185).

18. **Udayasiṁha.** Was the younger son of Samarasiṁha. He was a very brave ruler. He ruled not only at Jālōr and Nāḍōl, but greatly extended his sway over other parts of Mārwāṛ, namely, Maṇḍōr, Sānchōr, Bhinmāl, etc. He advanced with his army against the Vāghelā prince, Lavaṇaprasāda of Dhōlkā and again, after a few years, against his son Vīradhavala, who, however, succeeded in winning him over to his side. He refused to pay tribute to the Muḥammadans and successfully fought against their king Shamsu-d-dīn Altamsh sometime between A.D. 1210 and 1216. He also fought against

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[1] This is according to the writer Muhnōt Nainsī of Rājputānā, who says that the Paramāra Kuntapāla was ruling at Jālōr at the period in question. There were then three branches of the Paramāras in Rājputānā at Ābū, Jālōr and Kirāḍu; the last two being the offshoots of the first.

[2] *Ind. Ant.*, Vol. 53, p. 101.

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Sindhurāja (Sindhu king) and Rāwal Jaitrasiṁha of Mewār.[1] He was also a scholar, thoroughly conversant with the works of Bharata. Jindatta, the author of *Vivekavilāsa*, flourished under him. His queen Prahlādanadevī bore to him two sons, Chāchigadeva and Chāmuṇḍarāja. He is said to have one more son and a daughter; the latter was married to Vīrama, the elder son of the Vāghelā king Vīradhavala of Dhōlkā.[2] His inscriptions are dated from S. 1262 to S. 1306 (A.D. 1205–49).

19. **Chāchigadeva.** He was a son of Udayasiṁha. He is said to have killed his brother-in-law Vīrama. His queen Lakshmīdevī bore to him a daughter named Rūpādevī, who was married to Rāwal Tejasiṁha of Mewār.[3] His inscriptions are dated from S. 1319 to S. 1334 (A.D. 1262 to 1277).

20. **Sāmantasiṁha.** Was the son of Chāchigadeva. During his reign his sister Rūpādevī founded a tank in S. 1340 (A.D. 1283). His inscriptions are dated from S. 1339 to S. 1359 (A.D. 1282–1302).[4]

21. **Kānhaḍadeva.** He was the son of Sāmantasiṁha. He was twice attacked by 'Alāu'd-din Khaljī—the first time in vain[5] by Ain-ul-mulk, a chieftain of Alāu'd-dīn in A.D. 1304 and the second time, in about 1311 A.D. by Kamāla-ud-dīn, a general of Alāu'd-dīn, who succeeded at last in taking the fort. Kānhaḍadeva and his son Vīramadeva were killed in the battle. His family was put to the sword and his treasure plundered. When the fort of Jālōr was on the point of being taken by the Muḥammadans, Kānhaḍadeva, however, managed to send his brother Māladeva off the fort. Māladeva, thus escaping the fate of the garrison, succeeded later on in gaining favour of Alāu'd-dīn.

After his conquest[6] of the fort of Chitor in A.D. 1303, Alāu'd-dīn handed it over to his son Khiẓr Khān, but when after a few years it became almost impossible for him to hold his

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[1] *Ibid.*, Vol. 57, p. 33. In the inscription dated S. 1136 (*Ep. Ind.*, Vol. XIV, p. 296) Chāmuṇḍarāja is said to have overcome Sindhurāja.

[2] *Ep. Ind.*, Vol. XI, pp. 74–76.

[3] This alliance was probably meant to end former feud between Mewāṛ and Mārwāṛ referred to in Udayasiṁha's reign.

[4] These dates show that the so-called oldest work in Rājasthānī language entitled '*Ḍhōlā-māru-rā-dūhā*' or the poem of Ḍhōlā and Māru, the heroin of which is the grand-daughter of Sāmantasiṁha, is a compilation of a period not earlier than the 14th century A.D.

[5] According to Muhammadan authorities, Nādol was surrendered to the Muhammadans who attacked it, but there is no corroboration of this fact elsewhere.

[6] In this siege of Chitor, Gōrā and Bādal, the two relatives of Padmini (Tod's *Rājasthāna*, I, p. 308) do not seem to be two different persons, but only one, namely, Bādal of the Gaura family. The word 'Gōrā', in all probability, refers to the kshatriya family called Gaura, which existed in Rājputānā from the 5th to the 15th century A.D.

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sway over it, he ordered Khiẓr Khān to leave the place to Māladeva, who ruled there for about seven years. After Māladeva the fort went into the possession of his eldest son Jesā (Jayasiṁha) from whom it was gradually overrun by the Guhila ruler Mahārāṇā Hammīra of Mewāṛ.[1]

Thus ended the rule of the Chauhāns of Nāḍōl and Jālōr after a period of about three and a half centuries. They were at first very powerful, and defeated even the Sōlaṅkīs of Gujarāt, namely, Bhīmadeva I, Karṇa, and others. But, when the mighty ruler, Siddharāja Jayasiṁha, came to the throne of Gujarāt, they had to owe submission to him and fight on his side as tributaries. During Kumārapāla's reign in Gujarāt, the rule of the Chauhāns at Nāḍōl practically ceased for some time, and their influence considerably dwindled under the domination of the Sōlaṅkī king. It was, however, the Chauhān Kīrtipāla, who, by virtue of his valorous spirit, took Jālōr from the Paramāras, and made it henceforth the seat of the Chauhāns. Not content with this, he overran the surrounding countries, and made his power felt as far as Mewāṛ in the south. His dominions were further extended by his successors Samarasiṁha and Udayasiṁha, but subsequently, their country became a victim to Muḥammadan invasions of the powerful Sulṭāns Shamsu-d-dīn Altamsh and Alāu'd-dīn Khaljī of Delhi, which they were too weak to withstand, till ultimately, their ruin was brought about by the slaughter of their last ruler Kānhaḍadeva and his family in about 1311 A.D.

Rajputana Museum,
Ajmer.

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[1] *Ind. Ant.*, Vol. 55, p. 11.

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Gods and Temples in the Suket State.

By B. R. Beotra.

General.

The State of Suket lies between latitude 31° 13′ and 31° 35′ N. and longitude 76° 49′ and 77° 26′ E. on the north bank of the Sutlej, in a bend of that river which encircles it from Phernun on the east to Dehar on the west. It is bounded on the north by the Mandi State, while the Behna stream separates it from Kulu on the east. On the south the Sutlej separates it from the Shangri, Bhajji, Bahgal, Mangal and Bilaspur (Kahlur) States, which latter also borders it on the west. From east to west its greatest length does not exceed 34 miles and its width is from 10 to 12 miles throughout, but owing to the hilly character of the country the actual length and breadth are much greater.

The State has an area of 392 square miles and a population of 58,408 souls, the majority of whom are Hindus.

Suket is naturally divided into a small fertile plain enclosed by low hills in the Beas basin and a large mountainous region in the Sutlej basin. The former is known as Bahal and contains the headquarters of the State while the latter tract is known as Karsog.

The range of altitude is large; the highest point being about 10,112 feet in Mangarh *Ilaqa* and the lowest point being 1,700 feet at Dehar, where the Sutlej leaves the State. The capital is 3,000 feet above the sea level. The heat is oppressive in the Bahal in summer while the cold is bitter in the hills during the winter. Except in the rainy season, however, it is always possible to find some locality where the climate is healthy and bracing. The average rainfall at the capital does not exceed 55 inches a year.

The ruler of Suket belongs to the Chandarbansi clan of Rajputs and claims descent from the Pandavas of Mahabharata. He enjoys the hereditary title of His Highness the Raja and a salute of eleven guns and is a member of the Chamber of Princes in his own right.

The history of Suket is unimportant except that it discloses the antiquity of the dynasty. Briefly it may be stated that, after the conquest of Bengal in the eighth century, Sur Sen, an ancestor of the present Raja, sought a refuge at Allahabad and after his death his son, Rup Sen, retired to Rupar from where he was expelled by the Mohammedans. With him

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were his three sons, Bir Sen, Ghiri Sen and Hamir Sen. Rup Sen was killed in a battle with the Mohammedans and his three sons fled to the hills: Bir Sen went to Suket, Ghiri Sen to Keonthal and Hamir Sen to Kishtwar. Bir Sen crossed the Sutlej at Tattapani, attacked the small chiefs and completely subdued the country. The work of extending the borders of Suket was continued by Bir Sen's successors who brought the whole tract between the Sutlej and the Beas under the sway of Suket.

The reign of Sahu Sen, who was eighth in succession to Bir Sen, is only eventful for the quarrel between him and his younger brother, Bahu Sen, who took refuge in Kulu and whose descendants founded the Mandi State eleven generations after.

The history of Suket only consists of the accounts of battles with the Rajas of Mandi, Kulu and Bilaspur which resulted in the reduction of the State to its present size. Following the vicissitudes of fortune the State submitted to the East India Company after the Sikh War of 1846. This happened in the reign of Raja Ugar Sen. His Highness Raja Lakshman Sen, the present ruler, is the great-grandson of Raja Ugar Sen. He succeeded his brother, His Highness Raja Sir Bhim Sen, K.C.I.E., in 1919.

The State is now under the direct political control of the Hon'ble the Agent to the Governor-General, Punjab States, who has his headquarters at Lahore.

The people of Suket are very simple in their habits. They believe in all sorts of worship and one is almost surprised to find a god and a temple at every place. Many wonderful stories are told about these gods and in the following pages is given an account of some of the gods and temples in the Suket State.

Important Temples.

Temple of Mahadeo (Asambhnath).

The temple of Mahadeo lies one mile north of Purana-nagar in the Bahal *tehsil*. It is a stone building and the *pindi* (upper part of Shiva ling) of Mahadeo in it is made of black stone, nearly one span in height and about two feet in circumference.

The *pujaris* employed belong to the Kondal *got* of Gaur Brahmins and are called Rawals by the Hindus. They aver that their forefathers came from Bengal with the ancestors of the rulers of Suket and that the temple and its *pindi* already existed there. The story about the temple's foundation, as told by their forefathers, was that it was built in a single night by the order of a certain Raja of the Pandavas. The building as it now exists and the forms of pillar and *pindi* of Mahadeo clearly show them to have been made in very ancient times but the date and year of its foundation are not known.

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The place on which the *pindi* stands has a great natural rock under it. In fact the *pindi* has been carved out of this rock. The fret-work round the *pindi* is also of stone and the floor is paved with stones. Four large and four small columns of black stone rise from this pavement to support the roof which is so built as to be divided into small separate parts furnished with stone slabs.

The story of the worship of the *pindi* is that formerly the site which it now occupies was a mere jungle and entirely remote from all habitations. A certain Jat had a milch cow which yielded nothing when he tried to milk her. In his anxiety to find out the cause, the Jat made enquiries and found that the cow used to go out to the *pindi* of Mahadeo and standing over it, produced milk from her udders. Since then the people have cherished a belief in it and worshipped it.

The restrictions in connection with the *pindi* are that no Hindus except the *pujaris* may eat the offerings made to it, and that none of them may cross the stream of water which flows from the *pindi*. This stream is believed to be Parbati, the wife of Shiva. The offerings made to it are not eaten because :—

Káchá paṛa Braham is Shiv nirmal jo kháé,
Kahē Mahadeo sun Parbatí jarón múl sé jáé.

A fair is held at Mahadeo in honour of the god on the 25th of *Jeth* every year. The people keep awake in the temple on the Shivratri day.

Jagannath's Temple.

The temple of Jagannath is situated in Purana-nagar. The building is of pucca masonry. The story about its origin is that about 300 years ago a Beragi came to Suket from Jagannath on the coast of Orissa. He had an idol of Jagannath made of sandal wood. Hearing that he wished to sell it the Suket Durbar offered him Rs. 500 for it, but he refused the offer, saying that he was taking the idol to Kulu, the Raja of which had promised him Rs. 1,000. By chance the Beragi died before he could set out for Kulu, and consequently, by the Raja's order, the idol was placed in the building previously used as a seraglio. He appointed *pujaris* to the temple and granted land for its maintenance, spending Rs. 500, the price of the idol, on the funeral ceremonies of the Beragi and built the temple at State expense.

Endeavours have been made to ascertain the date of the temple without success. The largest idol is that of Jagannath which is a cubit in height. The nose, mouth, eyes and the hands without fingers are visible. At its right is an idol of Balbhadra and on its left is the idol of Lakshmi. There are also some other small idols in the temple. The management of the temple is entrusted to the *pujaris* who belong to the

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Kondal clan of Brahmans and possess only one house in the State. None else but the *pujaris* can work in the temple. The *bhog* offered to Jagannath consists of rice, pulse, etc. On the 2nd of Asarh *Sudi* (the date on which a fair is held at Jagannath, Puri, in Orissa) a fair is held here. A brief account of the fair is given below :—

Jagannath is supposed to become angry with his wife in consequence of some misunderstanding. The *pujaris* are unable to explain how the quarrel arose beyond saying that this is an imitation of what is done at Jagannath in Orissa. The *pujaris* and others assemble, place the idol in a palanquin and take it to Jamag garden on the Ghangal stream and stay there for two days. There is an idol of Ramchandra in the garden and Jagannath pays a visit to it. On the third day, Jagannath's wife goes to the garden and is reconciled to him.

The idol is then brought back to the temple and worshipped. When it is taken to the Jamag garden, the procession is attended by the State officers; elephants and horses forming the retinue. Other people with drums, flags and *palkis* also join it. The idol is brought back in full retinue. Sometimes His Highness the Raja graces the procession with his presence.

Momel Mahadeo.

This is one of the oldest temples in the hills and is said to have been built by the Pandavas of the Mahabharata. It is dedicated to Shiva and the fire in it keeps burning all the time. The people have very great faith in this god as a giver of rain. When the rains do not fall at the proper time, the people assemble in the temple and pray to the god who gives rain in return.

A special disciple of Shiva, known as Bhanaitu, is said to possess the power of digesting brick-bats. When he sits on the burning fire in the temple, Shiva enters his body making him impervious to injury.

The idol of the god is carried in a chariot when visiting another place. Many gold and silver ornaments decorate the idol which is accompanied by hundreds of followers including pipers and *chobdars*.

None can enter the temple with his shoes on, while women are never permitted access. Towards the west of the temple is an idol of another god which nobody sees for fear of immediate death. While worshipping him, the *pujari* closes his eyes to avoid all chances of seeing the god. The use of *charpies* is also forbidden within the temple walls.

Close to the temple is a heavy stone which is capable of being lifted by the little finger of any widow who is prepared to become a *sati*. In the old days when the *sati* ceremony was popular amongst the widows in the State, the widows used to lift the stone before they plunged into the sacred fire as it is believed that by doing so they avoid feeling the burning.

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Narsinghji's Temple.

This is a stone temple dedicated to Narsinghji and is situated in Purana-nagar. Inside the temple is an idol of Pakhan, like the idol of Salagram found in the Punjab temples. It is kept locked up in a box, the keys of which are entrusted to the *pujari*. There is a narrow hole in the Murti Pakhan and any one desirous of seeing the idol closes one eye and peeps through the hole with the other to see the dreadful appearance of Narsinghji. Those who see it are supposed to be exposed to danger. The *pujari* who waits on it, bathes and feeds it daily with closed eyes and averted face. As a rule none can see Narsinghji without the permission of the Raja. It is said that a Sadhu, who was going to Manikarn, getting the Raja's permission, saw the idol and consequently died, and that once thieves made away with certain ornaments from the temple but they were all struck blind at a short distance and were arrested.

On the Narsingh Chaudash day each year the Prahlad Charitar is held. The people allege to be followers of Ramchandra and refuse allegiance to Haran Kashyap and are beaten for their insubordination to the latter.

Surajkund Temple.

The Surajkund temple is situated near the capital at the foot of a hill and on the banks of a ravine. The courtyard is paved with stones. To the west stands the temple which is built of stone. In front of the temple door is a masonry tank which enhances the beauty of the site.

The temple and tank are surrounded by houses of wood and pucca masonry built for the convenience of travellers. Inside the temple there is an idol of *Suraj* (the Sun), weighing about 22 maunds. It is made from eight metals in the human form, but has four hands. Flanked by two brass horses, each one *balisht* in height, the whole image has the appearance of a chariot.

It is surrounded by several other idols of stone which represent Krishna, Radha, Rama, Balrama, Hanuman, etc. It is said that the idol was made in the State by the brass workers of Charag. Affixed to the wall of the temple is a large stone which bears the following inscription:—

> "In the name of the deity Ganesh. On the 28th Asarh, 1782 Bikrami, Maharaja Garur Sen and Siri Rani Panchamon Dei commenced to build the Surajkund temple in order to place the idol of the Sun there. The building was completed and the idol of the Sun placed in the temple on the 23rd Bisakh, Sambat 1785, Bikrami. He did so for religious purposes."

It is said that after he had built the temple and placed the image inside it, Raja Garur Sen ordered a learned Bhat to make the image move by virtue of his knowledge. The Bhat said his prayers and the Sun came down and gave 2½

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turns to the image. The Raja was pleased with him and granted him a revenue-free estate. The temple enjoys a *jagir* granted by the Raja.

Jamagbagh Temple.

This temple is situated on the Ghangal stream on the Purana-nagar-Chambi road about two miles from Purana-nagar. It is named after a Jangam (wrongly called Jamag). The Jangam was a disciple of Shiva and a *Guru* of the Rani of Suket. One day when the Jangam returned from the forest, he was feeling very thirsty but he could not get water near at hand. He scratched the earth with his hand and water flushed out.

The Rani built a tank there and the Jangam placed a *pindi* of Siva near the tank. Afterwards a temple was built over this *pindi*. There is a beautiful garden round the temple which is said to have been built in the 16th century during Raja Kartar Sen's time.

The Jaroli Temple.

The Jaroli temple was built by Her Highness Rani Sirmuri of Suket in 1921. The temple is built of stone, and is situated at Jaroli village, midway between Sundarnagar and Dehar on the Suket-Bilaspur road. Below the temple is a beautiful tank of clear water. A *serai* is attached to the temple for the use of travellers.

The Serpent Gods.

Mahun Nag.

The temple of Mahun Nag is situated at Bukhari Kothi where Raja Karna of the Mahabharata is said to have died. The Rajas of Suket have had a very great faith in this god. During the Mogul supremacy when Raja Shyam Sen of Suket was taken prisoner by order of the Mogul Emperor and was confined in the Delhi jail, Mahun Nag met him in the jail in the form of a bee and brought the Raja back to his country. On his return to the State the Raja granted full powers to Mahun Nag in his *jagir* and ordered that no action be taken against absconders from the State jail taking refuge in Mahun Nag's *jagir* area.

Mahun Nag cures people bitten by snakes. If you are so bitten, you are either to think of Mahun Nag or to worship him and you become immune from the effects of snake-bite. The use of a *charpie* or a *palki* is forbidden in Mahun Nag's *ilaqa*. Once the god saw a man using a palanquin in his *ilaqa*. He threw the man down from the palanquin. The man became insane and the palanquin struck against the temple of Mahun Nag where it can be seen even to-day.

The followers of Mahun Nag seldom use medicine. They are cured by worshipping the Nag. The temples of Mahun Nag and Dhamuni Nag are situated on very high peaks. Once both the gods decided to lower the height of their respective peaks. Mahun Nag kept his promise but Dhamuni Nag did not. This

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naturally offended Mahun Nag who once again raised the elevation of his hill. The iron bar with which he did so is carefully preserved in the temple till to-day.

The sacred fire is kept burning in the temple at all times. All persons anxious to communicate with the god, do so through the *pujari* who keeps long hair. The *pujari* worships the god and beats himself with an iron club. This being finished the god enters his body and replies to all questions through him.

The people of Suket have great faith in this god. They have stones representing the god at almost every place and worship them in the same way as they worship Mahun Nag.

This temple is situated in Ramgarh in the Karsog *tehsil*.

Dhamuni Nag. The god represents a certain Raja of Kulu and its original temple was at Larji in Kulu subdivision. The image was placed in a house owned by two brothers. A quarrel arose between the brothers and one of them left the house with the image and placed it at Sheri Kothi in Ramgarh. Just at this time another image of Dhamuni Nag was discovered from beneath the ground around Sheri Kothi and was also placed there. Since that day that land has never been cultivated.

From Sheri Kothi the Larji Nag was removed to Havali. One of the Nag's carriers wanting a cup of water from the zemindars of Havali was refused and on learning this the Nag thrust a brass rod in the ground and water flushed out. The spring still exists there but its water is not used by the people except on marriage occasions.

From Havali the Nag shifted to Shagog village. Here the *pujari* stayed in a zemindar's house where the number of loaves actually cooked by the host was multiplied by several hundreds. This surprised everyone. In order to find out the cause of this mystery an old woman opened the guest's kit in his absence. As soon as she did this, the image of the god was transformed into a snake. This terrified everyone and the *pujari* was turned out of the village at once.

The Nag then moved to Shenan but finally settled in the village of Sej in Ramgarh. One night Teban Deo of Choasi raided Dhamuni Nag's hill in order to deprive him of his *deodar* trees. Teban had partially succeeded in his mission when Dhamuni Nag became aware of the loss. He followed Teban and blinded him in one eye with his arrow. The stolen trees were then recovered by him.

The people worship Dhamuni Nag on occasions of festivities. Once the Nag was carried to Shagog where small-pox had spread, but as soon as he entered the village the epidemic disappeared.

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Aphna Nag.

The temple of this Nag is situated in village Khalgarh in the Karsog *tehsil*. The god is said to have been the eldest son of Kamrohad. Owing to some misunderstanding with his father he went to Delhi where he succeeded in meeting the wishes of a wealthy man by blessing him with two sons. The Delhi merchant built a temple in honour of the god at Delhi. He slaughtered a buffalo in the temple to celebrate the completion of the building. This offended the god who first came to Guma in Mandi State but later hid himself in a deodar tree at Latogal in the same State. It so happened that all cows who sat under the tree gave milk there for the god. They naturally gave none to their owners who became suspicious. One day they accompanied them to the jungle to catch the thief. As soon as the animals came under the tree milk came forth from them. The people stopped there and began to cut down the tree from which blood came out. The man who was cutting the tree accidentally dropped his axe on his head and died. The Nag at once came out and fled to Khalgarh. This god gives rain in time of need and people have great faith in him.

Choasi Nag.

This Nag lives in Choasi and is said to represent a shepherd boy of Kulu who lived on the milk of uncalved cattle. The people worship him as curer of disease. He helps the people in trouble. He is worshipped on occasions of rejoicings and goats are slaughtered in his honour.

Minor Gods.

Badhubara Deo.

This god represents a *rundh* from the Kanait community of Badhu village. Its temple is situated in Batwara. Ordinarily a Hindu is not permitted to enter the temple during the *sutak* or *mutak* days, i.e. within ten to fifteen days from the birth of a child in the house; or within sixteen days from the death of a relative. No such restriction is placed on the brotherhood of the god.

Badhubara is said to fulfil the desires of every one of his followers. When such desire is fulfilled the follower affixes a rupee and a pice on the wooden pillar in the temple by means of a nail. Such coins can be seen in abundance.

The image of the god is in stone. When the god is taken out the people place him in a chariot and carry him on their shoulders. The image is decorated with gold and silver ornaments and is taken from village to village; his followers being entertained in a princely manner everywhere.

It is stated that only recently an old man, who was very weak and had been confined to bed for many months, prayed that if the god would grant him strength to move to the neighbouring village where the god was expected the next day, he would offer a certain amount of money to the god. When

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the god reached that village the sick man gained strength to walk to the village where he paid his homage to the god and made the offering. He returned home the next day quite hale and hearty.

Badyogi Deo.

Badyogi Deo is Brahman by caste and is the priest of Mahun Nag. He lives on Badyog hill and is believed to have created the Ghangar forest near Tattapani which previously was a mountain in the Bhajji State and was brought to Suket by this god. When the mountain was removed from Bhajji it contained a huge treasure which was also transferred to Ghangar forest. It is reported that people in the neighbourhood of this forest have many a time found some old coins in the forest. It is also said that when the god worked the great miracle the Sutlej became dry and remained so for many days. By worshipping this god the people are cured of small-pox. This god has a son living at Sahajand.

Godariya Sidh.

The temple of Godariya Sidh lies in a cave at Dehar. A *faqir* is said to have lived in this cave. He used to cross the Sutlej every evening to spend the night in Bilaspur State. It is reported that whenever the *faqir* desired to cross the Sutlej, the river dried up and remained so till he reached the other bank. One of his followers, getting suspicious on account of the *faqir's* absence during night, entered the cave where he touched the *faqir's* cloak (*Godri*). He immediately lost his eyesight and fell down senseless. When the *faqir* returned to the cave the next morning he was very much perturbed to see the dead body of his follower and leaving his cloak there, disappeared from the cave. The dead body was burnt there with the cloak left behind. After a few days the *faqir* returned there and burnt himself also. The people threw his ashes into the river and placing a stone in the cave began to worship it as the idol of the dead *faqir*. His followers slaughter a goat in his honour on the occasion of the marriage of their eldest sons, as they believe that failure to do so brings unpleasantness between the newly married pairs.

The Jand Pir.

The temple of Jand Pir stands in Banaik near Bhojpur. Jand Pir was a *faqir* and was a great friend of Raja Shyam Sen of Suket. The Raja went to him every day to play chess. One day when the Raja was shivering with fever, the *faqir* covered him with his cloak. He then removed it and placed it on the ground. The Raja was cured but the cloak began to shiver instead. The *faqir* presented the coat to the Raja but the latter thought it below his dignity to accept such an humble present and gave it away to his groom. As soon as the groom touched it he was burnt to ashes. Immediately the ground gave way and the *faqir* who took the insult very seriously was buried beneath it. The

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Raja realised his mistake and built a temple there to commemorate his friend's memory.

Kamrohad Deo.

This god is said to have been a Raja of Kulu. He settled at Kamrohad on the boundary of Mandi and Suket States. He is known by several names, viz., Kamrohad Deo, Kamrah Deo and Kola Raja. Attached to the temple is a tank which is very deep and is the joint property of both the States. The people have great faith in this god. The offerings made to him are thrown into the tank which is said to contain property worth many thousands of rupees. It is held very sacred by the people who believe that a man who once caught fish in the tank lost his life.

Once a man promised to offer a pair of bangles to the god if he were blessed with a son. A son was born to him and he brought the child to the temple and threw the bangles in the tank. On his way back he thought he had been foolish to have thrown the bangles into the tank for nothing. As soon as this thought came to him, his son died and he found the bangles on his arms.

Great enmity exists between Bara Deo and Kamrohad, because the former had abducted the wife of the latter and always keeps her with him. Whenever Bara Deo moves out, the clouds cover the temple of Kamrohad so that the god may not see his queen with his rival.

A fair is held here on the first of *Har* every year.

Teban Deo.

While ploughing his land a Brahmin found the image of this god in the ground. He removed it to village Sarin where a serious epidemic was raging. As soon as the image reached the village the sick men were cured and all traces of the epidemic disappeared. The villagers built a temple there and placed the image inside it.

This god is also Brahmin by caste. He does not possess any vices except that he takes pleasure in theft. As will be remembered he once stole Dhamuni Nag's trees.

The people slaughter goats in his honour.

Goddesses.

The Pangna Goddess.

Pangna has been the capital of the Suket State for many centuries. The fort of Pangna which was built by Raja Bir Sen, the founder of the Suket ruling family, is still preserved. It contains an image of a goddess. In old days the people of this place used to hear from above a voice calling "*Piyun, Piyun*", i.e., "May I fall? May I fall?" They thought that the unknown voice would bring them some misfortune and were much terrified by it. One day the royal priest hearing the voice, replied "Every day you say this. Why don't you fall?" As soon as he uttered these words a goddess seated on a throne fell on the

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hill opposite the fort with a club in her hand. The people removed the goddess to the uppermost story of the fort. The throne was very heavy and was carried by many thousands of people who swooned at every step and remained in that condition till a goat was slaughtered to propitiate the goddess. It is said that if a pregnant woman takes some water in which the club is washed, she does not feel any trouble at the time of child-birth.

There is another temple in the lower story of the fort built in honour of a royal princess. The story is that the princess used to take pleasure in man's attire. A Brahmin saw her in male attire one day and conveyed to the Raja that the Princess was in love with a man whom he had seen in the fort. On learning this the Princess, who could not bear false accusation, poisoned herself. Before dying she wrote a letter in which she stated the reason for her suicide and requested the Raja to keep her buried in the ground for six months, adding that if her body remained perfect and without decay during this period he should understand that the accusations against her had been false and should never again appoint any one from the Brahmin's family to service in the State. The instructions were carefully carried out by the Raja and it was found that the allegations were false. The Brahmin's family was ex-communicated and a temple was built in honour of the Princess. The descendants of the Brahmin are still known as "*Nachhuhan*" or "untouchables".

Sitla Devi.

The goddess is worshipped by the ruling family of Suket. Sitla Devi is the goddess of small-pox and cures people suffering from this disease and from sore eyes. Her temple is situated at Dehar. When an epidemic of small-pox breaks out in a village, the villagers worship the goddess and slaughter sheep, goats and buffaloes in her honour. Similarly if a man suffers from sore eyes, he worships the goddess and lights a *thanda diva* (lamp made of wheat flour) in her temple.

The goddess has a sister in Nalagarh State. A fair is held in honour of the goddess on the 9th of *Jeth* every year.

There is another temple of Sitla Devi at Bhaun in the Bahal *tehsil*.

Murari Devi.

The temple of Murari Devi stands on a hill in Dehar *tehsil* on the borders of the Mandi and Suket States. Each State has appointed a *pujari* there who collects the offerings made by the residents of the State which he represents. Murari Devi is the family goddess of many Bohras, Brahmins and Kanaits who perform the hair-cutting ceremony in her temple. She is also the goddess of buffaloes. When a buffalo-cow calves, the owners offer *ghee* and goat to the goddess before using the *ghee* made from the milk of that buffalo-cow as they believe that failure to

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do so stops the buffalo-cow from giving milk. The Raja offers silver eye-balls to the goddess.

Chindi Devi.

At Chindi there is a horrible image of black stone representing the goddess Kali. When the goddess was followed by the demons she came to Chindi and hid herself under the ground. In order to show her powers she made a man seriously ill and when all treatment failed she appeared to him in dream and told him that if a temple were erected at her place and a goat killed there, he would be cured. This was done and the sick man was cured. From that day the goddess is believed to be cūrer of all diseases. An annual fair is held in her honour at Chindi.

Bharari Devi.

The temple of this goddess stands in *muhal* Kharal and is dedicated to a Kanait woman who had become a *sati*. The people worship her as a family-goddess, perform the hair-cutting ceremony in her temple, and slaughter a goat on the occasion of marriage.

Kao Devi (Kamia Kahiya).

This temple lies at village Kao, near Karsog. When the Pandavas lived in the Himalayas they built several places in the hills and determined to make another Kashi at Kao. As they did not wish to disclose their identity, they built every place in a single night. When they had built eighty *pindis* of Mahadeo at Kao, they heard the voice of the villagers. In order to keep themselves unknown, the Pandavas disappeared without building the last *pindi*.

The temple enjoys a *jagir* granted by the Durbar. The people worship the goddess and slaughter goats in her honour. The goddess is very furious and destroys many villages when she is in angry mood. She does not tour much, but when she is summoned by the Raja, the Durbar arrange to present her a goat at every stage. Buffaloes are also slaughtered in her honour.

None can enter the temple with his trousers on.

Jai Devi.

This temple stands at Jaidevi about seven miles from the capital. The goddess is the family-goddess of the rulers of Suket and is worshipped on the occasion of the birth, hair-cutting, and the marriage ceremonies.

Dunnan Devi.

She represents Kali and is represented by a big stone on the Sundarnagar-Simla road. She is very furious and is said to have ruined many villages even in Bhajji State.

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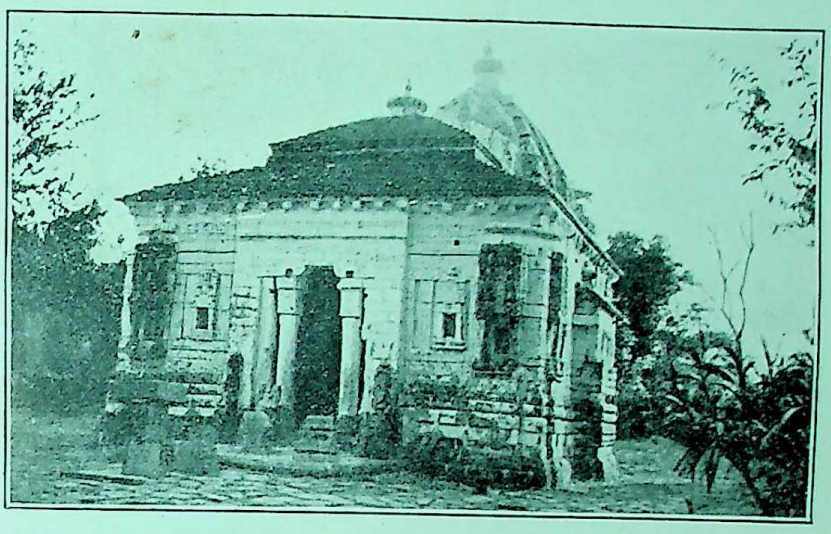

Fig. 1. The temple of Mahadeo.

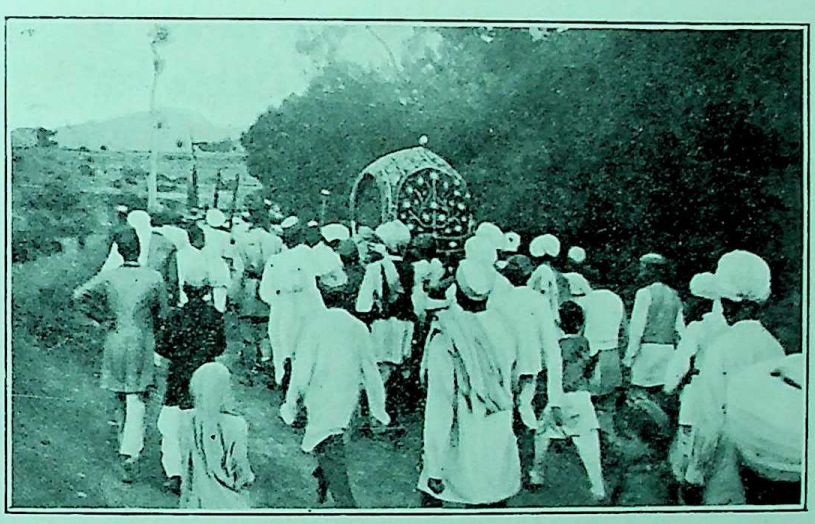

Fig. 2. Jagan Nath's Fair.

Fig. 3. The Surajkund Temple.

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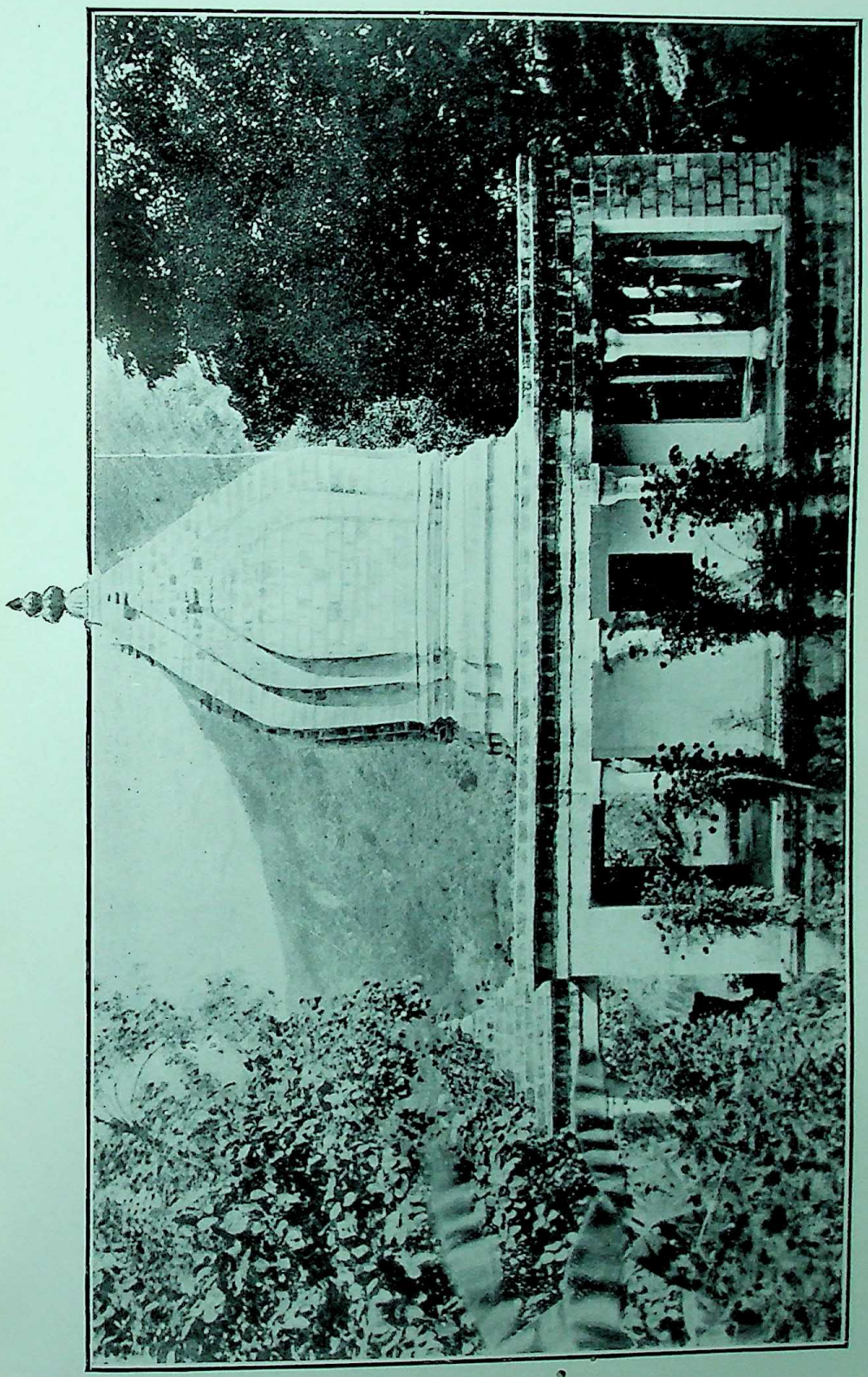

Jaroli Temple.

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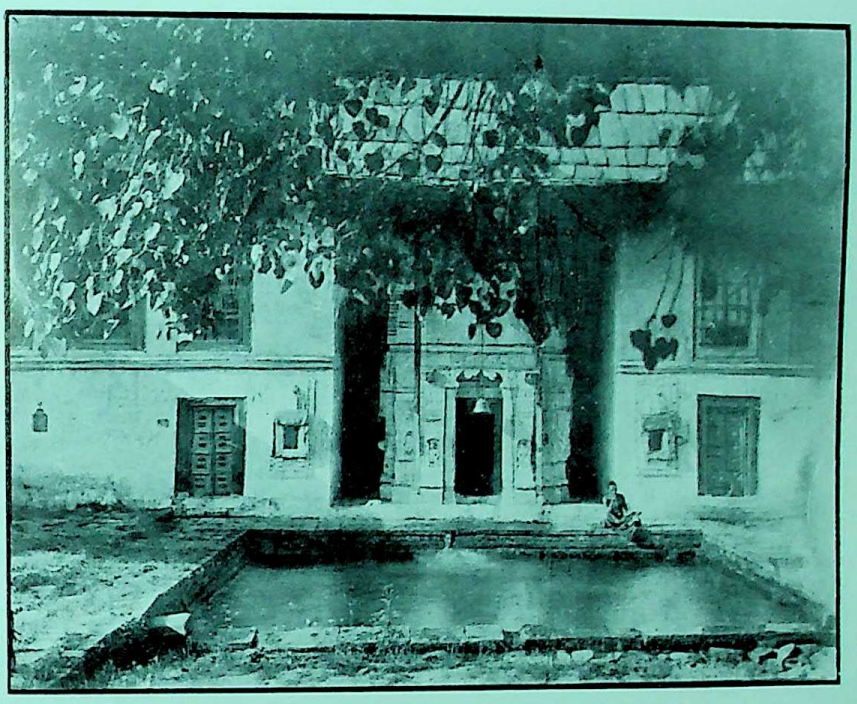

Fig. 1. The Jamag Bagh Temple.

Fig. 2. The Pangna Fort.

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On the significance of *Al-Baraṣ* البرص and *Al-Bahaq* البهق.

By C. Elgood.

Among the many fields of activity for the Orientalist that of medicine has been sadly neglected. No doubt it is rare to find any Orientalist possessed of sufficient medical knowledge or any competent physician possessing a wide enough training in oriental letters to enable him to deal with the subject. Browne in his Fitz Patrick Lectures sketched the historical side very pleasantly and throws out hints to later students. Campbell in his Arabian Medicine dealt only in a historical manner with the giant physicians of Arab learning. Foreign writers have dealt similarly with the subject. But no one, so far as I know, except Schlimmer has attempted to study the work rather than the writers. The result is that it is very difficult to read any Persian or Arabic medical works because the meaning of the technical terms is so doubtful. I have therefore attempted in this article to get at the meaning of two words, names of diseases, that are constantly occurring and are referred to over and over again in every medical work. Now the meaning of these two words is up till now far from certain. Lane in his Arabic-English lexicon defines *Al-Baraṣ* as "Leprosy, particularly the malignant species thereof termed Leuce, a certain disease well-known, which is termed whiteness". And of *Al-Bahaq* he says " the Mild species of leprosy termed Alphos or Vitiligo Alba, a whiteness less than what is termed *Baraṣ*, that comes upon the external skin of a man.....a blackness that affects the skin". Johnson in his Dictionary Persian, Arabic and English writes " *Baraṣ* is leprosy ; *Bahaq* is leprosy, white morphew (distinct from *Baraṣ*) or ringworm ". Stephenson in his recently published *Nuzhat-ul-Qulūb* throughout translates *Baraṣ* as leprosy, and *Bahaq* as Morphœa. Sobhy in his Book of *Al-Zakhīra* says that *Baraṣ* means *vitiligo* and *Bahaq* *acne*. But the only really scientific dictionary that I know of is " *La Terminologie Medico-Pharmaceutique* " of Schlimmer (referred to hereafter as *T*), a book lithographed in Teheran in 1874 and now very hard to obtain. He does more than translate his words, he discusses the meaning. *Al-Baraṣ* he translates as *Alphos* or *Leuce* but he states that there are two types, one innocent and one malignant. According to him it is never leprosy. *Al-Bahaq* he identifies with Freckles or Addison's Disease.

Now as soon as one reads the description of these diseases

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in any Arab text-book one finds that under these two terms five diseases are included—White and Black *Baraṣ*, White and Black *Bahaq* and a special disease of the Nails. The standard dictionaries are too scanty in their information and the one standard scientific work (*T*) is at variance with all the other authorities. I have thought it desirable therefore to probe for myself into the Arab writers, and to see what first-hand evidence there is by which the identity of these diseases can be established. One must realise at once that medicine was not such an exact science as it is to-day, that symptoms are confounded with clinical entities and that though the Arabs may have classified separately the various symptoms of what we should call one disease many diseases were jumbled together under one name because they had one symptom or sign in common. I do not hope therefore to be able to give five modern equivalents for these five diseases. But at least I will try to get a more accurate translation than "leprosy" as an equivalent for them all.

Now of all the works that I have consulted the *Qānūn* of *Abū* 'Alí Ibn Sína (980 A.D.–1037 A.D.)—known to the West as the Canon of Avicenna—gives the longest and most detailed description of the disease. I shall refer to this authority hereafter as *A*. The passage which I quote occurs in Book IV, Chapter 6, Section 2. His master was Abú Manṣūr Qumrī (died about 1000 A.D.) who also described these diseases in his work called *K. Ghinā wa Manā*, referred to hereafter as *Q*. An even earlier description of the diseases is found in the *Zakhīra* of Ṣábit Ibn Qurrah (836 A.D.–901 A.D.), referred to hereafter as *Z*. Of the Post-Avicennan writers the best descriptions are found in the *Kitāb-ul-Malikī* of Al-Majūsī (which I refer to as *K*), a late 10th century work, the *Zakhīra-i-Khwārazm Shāhī* of Sayyid Ismā'īl ul-Jurjānī (which I refer to as *S*), a work written between 1111 A.D. and 1136 A.D., the *Sharḥ ul-Asbāb* of Nafīs (referred to as *C*), written about 1423 A.D., and the *Mir'āt-ul-Ṣaḥīḥ* of Ghiyās Ibn Muḥammad, written about 1490 A.D. (referred to as *M*). An excellent modern medical dictionary is the Baḥr-ul-Jawāhir (referred to as *B*) which was lithographed in Teheran in 1871. It is not as good as Schlimmer's but has the merit of being written by a Persian doctor trained in the Avicennan School. I regret that all these works exist only in manuscript and I can therefore give reference in none of them. The later authors seem to have copied almost verbatim from Avicenna and I am not sure that any differences in their descriptions are not rather to be explained as errors than as emendations.

Now for the diseases themselves. *Bahaq* is of two kinds, the White and the Black. White *Bahaq* is called *Al-Waḍaḥ* الوضح (*S* and *A*). The cause of the disease, according to Arab patho-

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logy, is the inflammation of damp. The Expulsive Faculty is strong and drives the Materies Morbi, which is thin, to the surface where [*it forms white*, soft, glistening, circular patches. The hair on the white patches is unaffected. The lesion is quite superficial. If pricked with a needle blood will flow and if the patch is rubbed it will turn red.] For reasons that I will show later I consider this to be an early stage of White *Baraṣ*, but no doubt leprosy in its beginning, that is to say the vitiliginous primary exanthem, would be diagnosed as the benign White *Bahaq*. But the later stages of the disease, the loss of hair, and the marked infiltration of the skin are sufficient to distinguish leprosy from this which is characterised by "occurring on the surface of the skin and not in the deeper layers" (*Z*).

Now Black *Bahaq*, which is also known as *Al-Waḍaḥ* (*G*), though I think this must be a mistake, is due to the inflammation of Bile. The disease is slightly "stronger" than White *Bahaq*, for not only is the Expulsive Faculty strong, but the Alterative Faculty is also weak. The materies morbi is therefore driven in a crude condition to the surface of the body where *it forms* black, soft, superficial lesions. It is not accompanied by any scaling of the skin but there is a certain roughness to the touch (*C*). The hair on the affected parts is black or tends to become of a dark-reddish hue. The disease is confined to hot countries and adults. This disease I am inclined to think must be Addison's Disease or the pigmented state that occasionally follows Chronic Malaria. I am here in agreement with Schlimmer (*T*). As described by all writers the disease is an innocent and painless deposit of pigment in the skin. It bears no resemblance to Leprosy. It is definitely not Chloasma as this is a well recognised pigmentory anomaly to which the special name *Kalf* (كلف) has been applied. Perhaps I might limit Black *Bahaq* to Addison's Disease and not include under it Chronic Malaria. Because one author (*G*) says that patients suffering from quartan fever later develop *Kalf* and another (*A*) says that Black *Bahaq* is rare, and Addison's Disease is certainly not a common disease at the present day whereas Malaria must have always been very common.

The Pathology of *Baraṣ* is just the opposite to that of *Bahaq*. This also suggests that the ancients could not have applied both terms equally to leprosy, even if they were used at different stages of the disease. Besides which, there is a special word for leprosy *Al-Juẕám* (الجذام). *Baraṣ* is of three kinds, the white, the black, and a disease of the nails. The White *Baraṣ* is caused by a weakness of both Alterative and Expulsive Faculties. The materies morbi is thick. The essential lesion is a *superficial change* of the pigmentation of the skin towards white. It may occur locally or become generalised (*B* and *Q*). The white patches if rubbed do not turn red. The hair upon

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the *affected parts* turns white. And if the lesion is pricked with a needle it will not bleed, but a moisture exudes. I have no hesitation in saying that White *Baraṣ* is the Arab equivalent of Vitiligo (or Leucoderma), though Scleroderma and Morphœa would also be diagnosed under this heading. If all three diseases are taken together the Arab description fits in but it is a little too wide for any one.

In Vitiligo there is a disappearance of pigment from the skin and hair on it and the skin feels normal to the touch. So much fits in with the Arab description. But if pricked, a vitiliginous patch will bleed whereas in Scleroderma, or Morphœa, which is localised Scleroderma, the bleeding is less active than normal owing to the increase of fibrous tissue. But it is difficult to see why a white fluid should exude. Vitiligo too will redden if rubbed but Scleroderma will not. [Norman Walker says that Morphœa may follow slight irritation, such as the irritation of a collar stud, corset, or garters. Avicenna states that White *Baraṣ* may follow sacrification (*A*). I have already stated that I consider White *Bahaq* to be an early form of White *Baraṣ*. This is largely due to the fact that I can find no mild disease that fits in with the description of White *Baraṣ* other than Vitiligo before the hairs have lost their pigment. One author indeed states that the only difference between the two is the colour of the hair (*S*). And in support of my contention is the fact that some authors admit a difficulty in distinguishing between the two (*S*), whilst others admit that White *Bahaq* may change into White *Baraṣ* (*Q*, *K* and *Z*).]

Next comes Black *Baraṣ* and this I am prepared to admit is leprosy. The pathology is the same as White *Baraṣ*, being due to a weakness of the Alterative and Expulsive Faculties. The materies morbi is thick. [Clinically it is characterised by dark, peeling scabs or scales like a fish. The skin is infiltrated and irritates.] It is frequently the first sign of leprosy (*S*, *A* and *G*). The pigmentation, the infiltration, and the irritation make it impossible to doubt that this term denotes early leprosy. "The softer that black *baraṣ* is the better. And the more the colour of the lesions resembles the colour of the surrounding parts the greater is the hope. But when the contrast is great, the worse it is and there is no hope of cure" (*S*). The statement that it is frequently a fatal disease is in keeping with this translation. And the statement that *Baraṣ* may be changed into *Bahaq* (*K*) is not conflicting. Manson's *Tropical Diseases* (page 449) says "The spots (of leprosy) may occupy many inches in diameter, in some cases they may be pigmented from the outset or they may be mere vitiliginous patches. In not a few lepers what in the first instance was an erythematous patch, may in time become pigmented or it may become pale." At the same time the insistence on the resemblance of the scales that form on the body to the scales of a fish (*S* and *A*) com-

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pels one to admit that cases of Ichthyosis would also have been diagnosed as Black *Baraṣ*. I would also suggest that Pellagra would have been diagnosed as *Baraṣ*. In fact Manson's description of Pellagra might be Avicenna's of Black *Baraṣ*. He writes "Most observers regard the skin lesions of Pellagra as the earliest manifestation of the disease. At first an erythema, not unlike severe sunburn, is observable on parts of the body..... The affected area is swollen and tense and the seat of burning or itching sensations. The eruption is followed by a desquamation which leaves the skin rough thickened and permanently stained a light sepia colour. Two or three months after the onset the symptoms abate and although the skin remains dark coloured and rough, the disease appears to be arrested. Next spring however the whole series of phenomena recur in a more severe form. The eruption assumes a darker colour... The patient dies from exhaustion."

Finally there is the disease known as *Baraṣ* of the nails البرص الاظفار which bears no resemblance to leprosy at all. It is described as small, white, specks on the nail (*B*) and is clearly the innocent disease known as Leuconychia.

Summary.

To find an accurate translation of the terms *Al-Baraṣ* and *Al-Bahaq*, I have studied the original works of several Arab and Persian writers, the earliest being written about 990 A.D. and the latest in 1874 A.D. As a result of collating the various texts I consider that:—

(1) Al-Bahaq Al-Abyaḍ (البهق الابيض) is the equivalent of Vitiligo in an early stage.
(2) Al-Bahaq Al-Aswad, (البهق الاسود) is the equivalent of Addison's Disease or Chronic Malaria.
(3) Al-Baraṣ Al-Abyaḍ (البرص الابيض) is the equivalent of Vitiligo (Leucoderma), Scleroderma, or Morphœa.
(4) Al-Baraṣ Al-Aswad (البرص الاسود) is the equivalent of Pellagra, Leprosy, or Ichthyosis, and
(5) Al-Baraṣ Al-Aẓfār (البرص الاظفار) is the equivalent of Leuconychia.

The British Legation:
Teheran, 1929.

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ARTICLE No. 13.

On some Jurassic Plants from the Rajmahal Hills.

By B. SAHNI *and* A. R. RAO.

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INTRODUCTION.

Ever since the discovery, over half a century ago, of the rich flora described by Oldham and Morris[1] and by Feistmantel,[2] no fresh collections have been reported from the classical area of the Rajmahal Hills, with the exception of a few plant-remains recently found by Mr. G. V. Hobson[3] of the Geological Survey of India. The present paper deals with collections made by parties from the Lucknow University during the years 1927, 1931, and 1932. The fossils come from eight different localities, all in the northern part of the Rajmahal Hills. So far as we know, all these localities are new, with the exception of E and F (see below) which were already known to Feistmantel.

Several of the fossils belong to new species, but as some of them are only small fragments, names have been assigned only to three. The known species are only described or figured in so far as our specimens extend our previous knowledge.

---

1 Oldham and Morris (1863).
2 Feistmantel (1877); Feistmantel (1881).
3 For a list of these see *Rec. Geol. Surv. Ind.*, LXII, p. 27 (1929).

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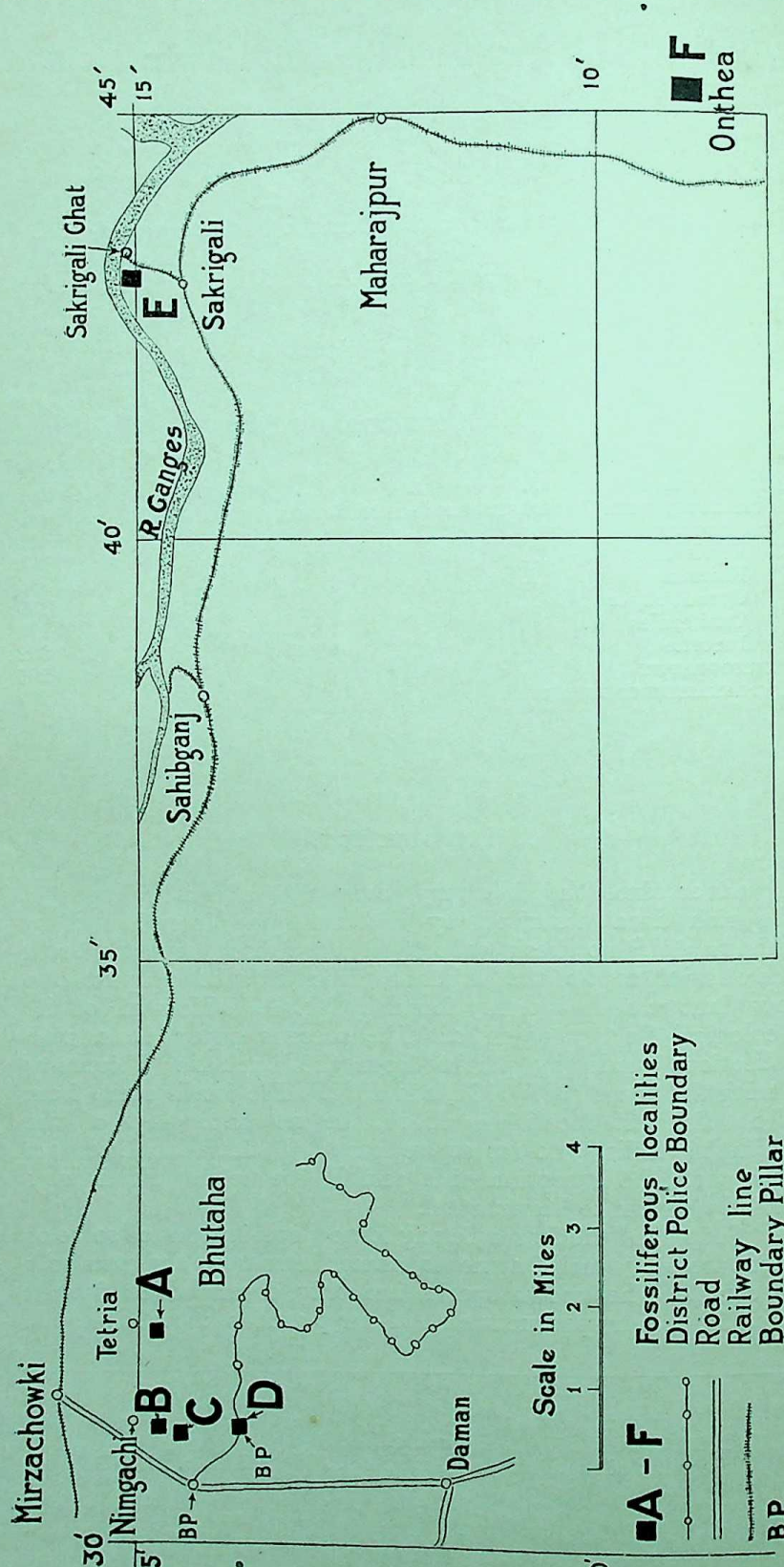

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We wish to thank Professor H. C. Das-Gupta for directing us to the localities near Mirzachowki and the authorities of the Geological Survey of India for permission to compare the type-specimens of *Sphenopteris Hislopi*. To Mr. G. V. Hobson we are indebted for information regarding some fossiliferous localities visited by him. We are grateful also to Prof. T. G. Halle and Dr. R. Florin for critical remarks on several of the species, and to Prof. A. C. Seward, F.R.S., for valuable criticisms made during a revision of the manuscript.

Localities.

Locality A. In situ. Saddle on Butaha Pahar, due south of Tetria Basti and about $1\frac{1}{4}$ miles S.E. of Mirzachowki station, E.I. Railway (Loop line).

Locality B. In situ, in a white or cream coloured rock exposed on the slope of Balbhadri Pahar, $1\frac{1}{4}$ miles W.S.W. of Mirzachowki.

Locality C. In situ, in a white or cream coloured rock exposed in a ravine along the outskirts of Balbhadri Pahar, about 2 furlongs south of locality B. Probably the same bed as at B.

Locality D. About 2 miles south of Mirzachowki and $\frac{3}{4}$ mile from locality C. *Not in situ.* Several good specimens were found in a heap of stones (? boundary pillar) near a quarry.

Locality E. Not in situ. Near ruins at Sakrigali Ghat, about one mile north of Sakrigali station.[1]

Locality F. Not in situ. Onthea village, about 4 miles south of Maharajpur station.

The two other localities are:

(*a*) Nimgachi, one mile S.W of Mirzachowki station.

(*b*) *In situ,* in a white or cream coloured rock (weathering rusty brown) at the head of a ravine about $\frac{1}{2}$ mile east of Nipania village.

While there is no doubt that all the above localities belong to the Rajmahal Series, we regret we are not competent to assign them to their respective horizons in the Series. The flora as a whole seems to support the view that the beds are of middle jurassic age. The distribution of the species at the different localities is given in the accompanying table.

---

[1] During a visit in January 1932, Mr. W. N. Edwards located the plant-bearing bed on the slopes of the hill on which the ruins are situated, but our specimens were all found on the surface.

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Table showing Distribution of Species referred to in this Paper.

Species.	Localities.						Nimgachi.	Near Nipania.	Unknown.	References to figures.
	A.	B.	C.	D.	E.	F.				
EQUISETALES.										
Equisetites rajmahalensis O. and M.			...	...	...	12*c*, 22, 145	...	...	124, 125	...
FILICALES.										
Sphenopteris Hislopi O. and M.	...	93*a*, 93*b*	91	41	...	...	...	...	...	...
Sphenopteris sp. ...	...	...			...	6, 11*a*		...	...	.....
Coniopteris hymenophylloides Brongn.		92, 93*a*, 93*b*	73	...	...	...	...	...	...	.....
Marattiopsis macrocarpa Morris sp.	...			50, 63, 64	..	12, 18, 20	...	...	...	Pl. 11, figs. 1, 2.
Gleichenites gleichenoides	...		...	45, 47, 48, 58, 65	..	...	...	...	128	.....
Cladophlebis indica O. and M. sp.	...			40, 42, 43, 52, 67*a*, 70			...	...	...	Pl. 11, figs. 3—5.
? Cladophlebis sp.	...	...	71, 75			...	...	..	...	.....
CYCADOPHYTA.										
Ptilophyllum cf. *cutchense* McCl. sp.		...	...		..	1, 3, 5, 8, 15	...	...	...	Pl. 11—12, figs. 7, 8, 8*a*.
Ptilophyllum acutifolium (O. and M.).	..	94, 95	71, 73, 74	46	25		141	..	...	Pl. 12, fig. 8*b*.
Ptilophyllum tenerrimum (Fst.).	97, 109	...	...	...					...	.....
Small cycadean stem ...	...	...	...		...	142				Pl. 12, fig. 14.
Williamsonia cf. *Sewardiana* Sahni.		...	..	...	...		...	144		Pl. 16, fig. 38.
Otozamites parallelus (Fst.)	103, 108	..	...	...	...				...	Pl. 12, figs. 10, 11.
Zamites proximus (Fst.) ...					..	4	..	...	...	Pl. 11—12, figs. 12, 13.
Pterophyllum incisum sp. nov.	...	...			...	...			129	Pl. 13, figs. 15, 16.
Pterophyllum sp. α ...	116, 117		...	..		..	...	...	...	Pl. 13, fig. 17.
Pterophyllum sp. β ...	...	...	...	41				...		Pl. 13, fig. 18.
Dictyozamites falcata (Morris).	99, 101, ?107, 115, 118	...		...	...			...	...	.....
Dictyozamites indica (Fst.)	...	...	...			4, 7, 9, 24		..		Pl. 13-14, figs. 19—22.
Dictyozamites Hallei sp. nov.	...	...	...		...	15, 143	...	..	...	Pl. 14, figs. 23—25.

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Species.	Localities.						Nimgachi.	Near Nipania.	Unknown.	References to figures.
	A.	B.	C.	D.	E.	F.				
Taeniopteris spatulata (McCl.).	...	95	88	...	...	6, 11*a*, 11*b*	...	..	...	... ..
Taeniopteris McClellandi O. and M.	...	...	...	...	...	15	...	...	...	.....
Taeniopteris (? *Nilssonia*) spp.	102, 104, 111, 114	...	..	..	...	142	...		126, 127	.....
Nilssonia (? *Anomozamites*) *fissa* (Fst.).	100, 102, 104, 111	94, 95, 96	89	...	...	...	..	...	126	Pl. 15, figs. 27–29.
Nilssonia Morrisiana (O. and M.).	...	..	...	40, 52, 61, 62	...		...		...	.....
Nilssonia princeps ...	...	...	..	40, 44, 49, 52, 55, 62, 64, 66	30	2, 5, 14, 16	...	...	...	Pl. 15, fig. 30.
Seed, probably of *Nilssonia* sp.	..	...	..		...	5	..	...		Pl. 11, fig. 9.
CONIFERALES.										
Ontheodendron Florini sp. nov.	..	...	..		..	10*a*, 10*b*	...	.	...	Pl. 15—16, figs. 31—34.
Araucarites sp. (cone-scales).	...	96(1), 96(2)	...		...	...	..		...	...—
Elatocladus conferta (O. and M.).	..	...	...	...	...	11*b*	.	..	..	.. ...
Elatocladus tenerrima (Fst.)	...	...	80(?)	...	...	15, 17	.	...	...	.....
Elatocladus sp. α ...		...	...			19*b*, 23*b*	...		...	... ..
Elatocladus sp. β ...	98	...	...	...	27	7	...			. ...
Brachyphyllum expansum (Sternb.).	112, 113	..	...	...		...	...	...	..	...
INCERTAE.										
Podozamites sp. ...	...	..			...	19*a*, 19*b*, 23*a*	...		.	Pl. 16, fig. 35.
Axis with small scars ...	110	...		...	...	...	...	...	...	Pl. 11, fig. 6.
Cf. *Cycadolepis*	..	...	...	...	...	24	...	..	.	.....
Axis with elliptical scars	...			...	...	14, 16	...			Pl. 15, fig. 30 right.
Axis with large polygonal scars.	...	...	...	..		142	...	...	..	...
Peculiarly branched axis		...	78			...	...	.	...	Pl. 15, figs. 36, 37.
Seeds, probably Gymnospermous.	102, 112	94, 95	...	66*a*, 66*b*	...	16	...	...	...	.. ...
Silicified wood (indet.) ...	...	...	.		38, 39	...	...			.....
Finely tuberculate impressions.	...	...	...	...	...	12*b*	...	.	...	.....
Axis with large rhomboid scars.	...	...		...	..	..	.	...	W. N. Edwards	Pl. 14, fig. 26.

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Description.

EQUISETALES.

Equisetites rajmahalensis O. and M.

(Specimens F 12 *c*, 22, 145; unknown loc. 124, 125.)

Nodal diaphragms with about 30 teeth, and stems with leaf-sheaths of which only the lower (fused) portions are preserved, in the form of moulds of the external surface. The grooves between the fused leaves appear as straight narrow ridges, while the intervening strips, each representing a leaf, are covered with numerous oval tubercles which are probably casts of stomatal depressions. There is a very close resemblance with some of Prof. Seward's figures of *E. ferganensis*,[1] a Jurassic species from Afghanistan and Turkistan which must be closely allied if not identical with *E. rajmahalensis*.[2]

FILICALES.

Sphenopteris Hislopi O. and M.

(Specimens B 93 *a*, 93 *b*; C 91; D 41.)

Sterile fragments comparable with I. 1. XXXI. 1–5.[3]

Sphenopteris sp.

(Specimens F 6, 11 *a*.)

Unidentifiable fragments.

Coniopteris hymenophylloides Brongn.

(Specimens B 92, 93 *a*, 93 *b*; C 73.)

Sterile fragments closely resembling some published figures of this variable species. Our specimens show well defined pits on the rachis which no doubt mark the points of attachment of ramental scales.

We have no doubt that, as pointed out by Professor Seward, several of the fragments figured by Oldham and Morris from the Rajmahal Hills under the names *Sphenopteris bunburianus* n. sp., and *Sphenopteris* sp. really belong to *C. hymenophylloides*.

---

[1] Seward (1912), p. 4, pl. 1, figs. 4, 4a, 5, 6, 7.

[2] Oldham and Morris (1863), pl. II, figs. 2–5, pl. XXXV, figs. 3-4; Feistmantel (1877), pp. 63–66.

[3] References in this form relate to the volume, part, plate, and figures, respectively, of the Fossil Flora of the Gondwana System.

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MARATTIOPSIS MACROCARPA Morris sp.

(Pl. 11, figs. 1, 2.)

(Specimens D 50, 63, 64; F 12, 18, 20.)

1863 *Pecopteris macrocarpa* in Oldham and Morris I. 1. XXVIII. 2, 3.
1877 *Pecopteris* (*Asplenides*) *macrocarpa* in Feistmantel I. 3, I. 1, 2.
1877 *Alethopteris macrocarpa* in Feistmantel I. 3. I. 1, 2.
1877 *Asplenites macrocarpus* in Feistmantel I. 2. XXXVI. 5, 6, 7; I. 2. XXXVII. 3, 4; I. 2. XLVIII. 2.
1920 *Marattiopsis macrocarpa* in Seward and Sahni, p 20. pl. VII, figs. 71, 71 *a*, 71 *b*.

Some of our specimens are better preserved than any previously described; they confirm the view (Seward and Sahni, p. 20) that the fertile organs are synangia of Marattiaceous type and not sori consisting of separate sporangia. All attempts to obtain spores, however, have failed.

GLEICHENITES GLEICHENOIDES O. and M. sp.

(Specimens D 45, 47, 48, 58, 65; unknown loc. 128.)

CLADOPHLEBIS INDICA O. and M. sp.

(Pl. 11, figs. 3–5.)

(Specimens D 40, 42, 43, 52, 67 *a*, 70.)

1863 *Pecopteris* (*Alethopteris*) *indica* n. sp. Oldh. and Morr. in I. 1. XXVII. 1–3, p. 47 (Rajmahal).
1877 *Alethopteris indica* Oldh. and Morr. sp. in Fst. I. 2. XLVI. 3-4, p. 37 (Rajmahal).
1877 *Alethopteris* (*Cladophlebis*) *indica* Oldh. sp. in 1. 3. I. 3–5, text p. 7 (Golapili).
1879 *Alethopteris indica* Oldh. and Morr. in I. 4. I. 1. (fragment), p. 15 (Sripermatur area).

The Rajmahal specimens originally named *Pecopteris* (*Alethopteris*) *indica* cannot be distinguished in the sterile condition from the widely distributed species *Cladophlebis denticulata* which is known from Jurassic strata in England, South Africa, Graham Land, and Australia. But among the several specimens in our collection there are two fertile fronds (D 42 and D 67 *a*) which show that in the arrangement of the sporangia the Indian plant differs from the English specimens

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described by Prof. Seward[1] and later by Prof. Halle[2] under the name *Cladotheca undans*. In the latter the sori are linear and contiguous, the sporangia lying in parallel rows,[3] while in our specimens, wherever the arrangement is at all clearly seen (Pl. 11, fig. 4 right) there are 4–7 sporangia forming a round or elliptical sorus. Our figures show the fertile leaf as seen from above, the lamina being raised into a dome over each sporangium. The margin of the fertile pinna is distinctly crenulate; in the sterile pinnæ it is denticulate or finely crenulate, sometimes entire.

? Cladophlebis sp.

[Specimens C 71, 75 (counterparts).]

This sterile fragment closely resembles some Japanese mesozoic fronds referred by Oishi[4] to *C. nebbensis*. At the same time there is some resemblance with sterile leaves from the Rajmahal Hills figured by Feistmantel[5] as *Marattiopsis macrocarpa*. The upper margin of each pinna curves up at the base so as to overlap the lower margin of the pinna next above.

CYCADOPHYTA.

Genus Ptilophyllum Morris.

In the absence of reliable diagnostic characters all the Indian leaves were provisionally grouped by Seward and Sahni[6] in 1920 under the name *P. acutifolium*. This name was first given by Oldham and Morris to certain fronds from the Rajmahal Hills, with rather long, acutely pointed pinnæ, but was recently adopted in the sense of an aggregate species. While adopting this course it was admitted that a more detailed investigation, particularly if additional cuticular preparations are available, would probably lead to the recognition of well-defined species or varieties[7]. After a careful examination of numerous specimens from the Rajmahal Hills we believe that it is now possible to recognize three distinct species: *P. cf. cutchense* McCl. sp., *P. acutifolium* Morr. sp. (in the narrow sense), and *P. tenerrimum* Feist.

---

[1] Seward and Ford (1903), p. 253, pl. 27, fig. 4; Seward (1910), p. 345, fig. 258.

[2] Halle (1911), pls. 1, 2.

[3] Halle (1911), p. 6, text-fig. 1.

[4] Oishi (1931), pl. 16, figs. 4, 4*a*.

[5] Feistmantel (1877), I. 2. XXXVI. 5–7; I. 2, XXXVII, 3-4; I. 2. XLVIII. 2.

[6] Seward and Sahni (1920), p. 20.

[7] Seward and Sahni (1920), p. 21.

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P. cf. CUTCHENSE McCl. sp.

(Specimens F 1, 3, 5, 8, 15.)

(Plates 11-12, figs. 7, 8, 8 *a*.)

We propose to adopt this name for fronds corresponding to those found in organic connection with *Bucklandia indica* Seward[1]. In this form the pinnæ are relatively short and have a rounded apex (cf. I. 1. XXI. 3). The anatomy of the rachis as well as of the pinna has to some extent been elucidated by Dr. Bancroft[2]. The cuticle has not yet been found, but several of our specimens from Onthea are preserved in such a fine-grained rock that the epidermal cells and the distribution of the stomata can be clearly made out. The photographs in figs. 7, 8 are from a cast of the undersurface. Usually four rows of epidermal cells are clearly seen over each vein while the bands between the veins show a number of elliptical protuberances probably representing casts of the depressions in which the stomata were sunken. These protuberances are all placed longitudinally (see fig. 8 *a*) and usually two but sometimes three of them are met with in crossing each band.

We thus know not only the anatomy of these leaves but also something of the epidermal characters. Moreover, quite recently one of us has been able to establish a relation between *Bucklandia indica* and certain flowers which have been named *Williamsonia Sewardiana*[3]. We therefore now have very strong grounds for separating under a distinct name at least one of the leaf forms provisionally grouped under the aggregate species *P. acutifolium*. For this we adopt the designation *P. cf. cutchense*[4].

P. ACUTIFOLIUM Morr. sp.

(Pl. 12, fig. 8 *b*.)

(Specimens B 94-95; C 71, 73, 74; D 46; E 25; near Nimgachi 141.)

In the narrow sense this name may be confined to *Ptilophyllum* fronds with long and acutely pointed pinnæ similar to those originally described by Morris under this name (I. 1. XX. 2). The cuticle of this form is still unknown; but as in

---

[1] Seward (1900), p. 193 and text-fig. 30; Seward (1917), p. 488, fig. 579.

[2] Bancroft (1913). [3] Sahni (1932).

[4] We prefer not to employ the designation *P. cutchense* McCl. because the identity of the Rajmahal leaves with McClelland's type-specimen cannot be proved as the latter is very badly preserved, showing "no trace of venation" (see Oldham and Morris, 1863, p. 31; Sahni, 1932).

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the specimens of *P. cf. cutchense* just described, the surface characters are sometimes well preserved, and a comparison shows that the two forms are distinct. In *P. acutifolium* the protuberances on the stomatal bands are smaller, isodiametric and more numerous; in crossing each stomatal band 4–6 of them are met with (see fig. 8 *b*).

P. TENERRIMUM Fst.

(Specimens A 97, 109 counterparts.)

This is a comparatively rare and delicate form with narrow pinnæ having straight margins (cf. I. 2. XLI. 3, 3 *a*, and Seward and Sahni, 1920, Pl. V, fig. 47). The epidermal characters have not yet been made out, but the species is too sharply marked off in its gross features to be confused with any other.

SMALL CYCADEAN STEM.

(Pl. 12, fig. 14.)

(Specimen F 142.)

This small stem, covered with an armour of rhomboid leaf-bases, evidently belongs to a cycad; there are alternating zones of broad and narrow rhomboid leaf-cushions as in other fossil as well as living cycads. The leaf-trace bundles are not preserved.

On the same hand-specimen there are fragments of several other plants, e.g. a badly preserved ovulate cone, an axis with large polygonal scars, each having a central transversely elongated depression, leaves of *Ptilophyllum* and of *Taeniopteris* sp. (not *T. spatulata* but a broader form).

WILLIAMONIA sp. cf. W. SEWARDIANA Sahni.

(Plate 16, fig. 38.)

(Specimen from near Nipania 144.)

The figured specimen was found at a new locality about half-a-mile east of Nipania village, in a soft white or cream coloured rock, crowded with the remains of *Ptilophyllum*, *Tæniopteris spatulata*, *Nilssonia* (? *Anomozamites*) *fissa*, etc. Although poorly preserved, the specimen shows a fairly close resemblance in general features with *W. Sewardiana* Sahni[1], recently described by one of us from near Amrapara. The central part (*p*), probably representing the axis of the peduncle, became detached in the specimen, and when pulled out showed

[1] Sahni (1932).

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that it lay in a funnel-shaped cavity enveloped by the bracts. The latter are mostly crushed flat, but in a few cases the rhomboid cross-section is clearly seen. No details of structure can be made out; the fertile part is not preserved.

Otozamites parallelus (Fst.).

(Pl. 12, figs. 10, 11).

[Specimens A 103 and 108 (counterparts).]

The specimen here figured corresponds in detail with the fragment described by Feistmantel[1] from the Vemavaram shales as *Otozamites parallelus*. This species differs from *Otozamites Hislopi* in the venation of the pinnæ. In *O. Hislopi* only 7 or 8 veins are met with in crossing the middle of a pinna and nearly all the veins are divergent, while in *O. parallelus* there are as many as 12–14 veins and the four or five veins along the middle are almost parallel, lending to the leaf a deceptive resemblance with *Ptilophyllum*. *O. parallelus* has not previously been recorded from the Rajmahal series.

Zamites proximus Est.

(Pl. 11-12, figs. 12, 13.)

(Specimen F 4.)

1877 *Zamites proximus* Fst. . . . Feistmantel I. 2. XLI. 1, 2, 2*a* (but not 1. 4. VII. 1, 2).

Our specimen shows on the upper side of the rachis two alternating rows of linear scars of pinnæ. In each scar about 6 distinct pits mark the positions of the vascular bundles. Feistmantel's Vemavaram[2] specimens which he identifies with his *Zamites proximus* from the Rajmahal Hills belong in our opinion to a different genus.

Pterophyllum incisum sp. nov.

(Pl. 13, figs. 15, 16.)

(Specimen No. 129, locality not known, probably A.)

Diagnosis.—Frond pinnate, pinnæ linear, with parallel margins, usually about 4 mm. wide by about 3 to 4½ cm. long in the middle part of the frond; veins parallel, mostly unbranched, 6–8 in each pinna; tips of pinnæ often incised once or twice in an equal or unequal manner; teeth bluntly pointed,

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1 Feistmantel (1879), I. 4. VIII. 5, 5*a*, p. 22.
2 Feistmantel (1879), I. 4. VII. 1, 2.

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with 1–3 veins in each. When two or three veins enter a tooth they converge at the apex.

This incomplete but fairly well-preserved frond is referred to a new species chiefly on account of the incised tips of the pinnæ, which mark it as a type intermediate between *Pterophyllum* in the narrow sense [1] and *Anomozamites*.

Pterophyllum sp. α.

(Pl. 13, fig. 17.)

(Specimens A 116, 117.)

These are two indifferently preserved impressions of large pinnate leaves of the *Pterophyllum* type as defined by Prof. Seward, that is, with the pinnæ attached laterally to the rachis and not on its upper side as in *Zamites*. The pinnæ come off from the rachis almost at right angles and are attached by their entire base, which is neither contracted nor expanded. The figured specimen (A 116) is the smaller and better preserved of the two; it represents the distal half of the leaf. In the larger leaf the rachis is about 5 mm. thick in the widest part and the pinnæ (about 5 mm. broad by at least 4·5 cm. long) show indistinct parallel veins. In the smaller leaf about five parallel veins can be made out in each pinna; there are no bifurcations or anastomoses.

Our specimens are not sufficiently well preserved to admit of specific identification.

Pterophyllum sp. β.

(Pl. 13, fig. 18.)

(Specimen D 41.)

A large pinnate frond with a rachis 3½ to 6 mm. broad and relatively stiff linear pinnæ attached to it somewhat obliquely by their full width. The appearance of the leaf suggests a coriaceous habit. The pinnæ are 3-4 mm. wide and at least 4 cm. long, with parallel margins. The tip is not preserved. There are clear indications of 4 or 5 parallel veins in several of the pinnæ. Faint longitudinal striations are seen on the naked rachis. Our specimen bears a close resemblance in habit to *Dioonites Cornallianus* (Göppert) Bornemann, as described by L. F. Ward [2].

Dictyozamites, Oldham.

When this genus was founded in 1862 the only species known was *D. falcata*, based upon some specimens from Amrapara. Since then the genus has been found to have had a

[1] As defined in Seward (1917), p. 549.
[2] Ward (1900), p. 244, pl. 28, fig. 2.

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wide distribution in the Jurassic: England, Bornholm, Japan, Korea, Tierra del Fuego [1]. India still remains the main centre of distribution, with three of the five known species, found at several localities in the Rajmahal Hills, at Golapili near Ellore, and at several other places extending as far as the Trichinopoly district.

DICTYOZAMITES FALCATA (Morris).

(Specimens A 99, 101, ? 107, 115, 118.)

1863 *Dictyopteris falcata* in Oldham and Morris, I. 1. XXIV. 1.

1863 *Dictyopteris falcata* var. *obtusifolia* Morris, in Oldham and Morris, I. 1. XXIV. 2.

1863 *Dictyozamites*, Oldham, in Oldham and Morris, I. 1, p. 40.

1877 *Dictyozamites indica* (Feist.) in Feistmantel, I. 3. II. 5-6 (Golapili).

1879 *Dictyozamites indica* (Feist.) in Feistmantel, I. 4. III. 1, 2, 5, 6; I. 4. IV. 1-8; 1, 4. V. 1-12 (Madras Coast).

1917 *Dictyozamites falcata* (Morris) in Seward, Foss. Pl. III, p. 546.

From locality A we have several good specimens showing the characters of Morris's original specimens of *Dictyopteris falcata* which is now known as *Dictyozamites falcata* (Morris) [2]. In this species we include only the typical specimens detailed in the synonymy, and not the small fronds from Murrero to which Feistmantel gave the name *D. indica*.

Our specimen 107 differs slightly from typical fronds of this species, in that the vein meshes along the border of the pinna are not smaller than those in the middle; the meshes on each pinna are also on the whole much fewer in number than in the other specimens.

DICTYOZAMITES INDICA (Fst.).

(Pl. 13-14, figs. 19–22.)

(Specimens F 4, 7, 9, 24.)

1877 *Dictyozamites indica* Fst. in Feistmantel, 1, 2. XLVI. 7, 8. Text, page 70 (Murrero).

1879 *Dictyozamites indica* Fst. in Feistmantel I. 4. III. 3, 4 (Madras Coast).

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[1] See Seward (1903*a*); Nathorst (1889); Yabe (1905); Halle (1912, 1913); Seward (1917), p. 546 ff.

[2] This species is the commonest fossil in some grey, more or less indurated clays, exposed about ⅓ mile due west of Paharpur Chhota, a village 1½ miles N.W. of Amrapara.

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Diagnosis.—Pinnæ similar in form to those of *Dictyozamites falcata* but much smaller in size (2-3 mm. by 9-10 mm.). Venation as in *D. falcata* except that the meshes are much smaller and only about 10 to 11 veins are met with in crossing the pinna, while in *D. falcata* there may be 16 to 20.

The name *D. indica* was first proposed in 1877 by Feistmantel for some small fronds from Murrero. Our specimens from Onthea are identical in size, form, and venation with Feistmantel's Murrero fronds which in our opinion represent a distinct species. We accordingly adopt the name *D. indica* (Fst.) for the smaller form, reserving the older name *D. falcata* (Morris) for the much larger leaves from Amrapara, and from Golapili. Among Feistmantel's Madras Coast specimens there are two fronds of small size (I. 4. III. 3, 4) which agree very closely with his Murrero specimens and with our Onthea ones. They may therefore be retained under *D. indica*.

Dictyozamites Hallei sp. nov.

(Pl. 14, figs. 23–25.)

[Specimens 143, F 15 (several leaves).]

Diagnosis.—Habit *Ptilophyllum*-like, pinnæ crowded, stiff and linear, straight or very slightly falcate, 2 to 2·5 × 15 mm., gradually narrowed to a rounded apex, base auriculate, oblique. Vein meshes along the median line very narrow, the veins here being parallel, with only an occasional anastomosis. About 7-8 nerves are met with in crossing the middle part of the pinna.

This well-marked species is represented by several leaves, all found at locality F (Onthea). The species is locally abundant, but appears to have been overlooked in the past owing to its superficial similarity with *Ptilophyllum*, which is very striking.

Professor T. G. Halle, who has examined our figured specimens, agrees that they should be referred to a new species; we have pleasure in naming it *D. Hallei* sp. nov.

Tæniopteris spatulata (McCl.).

(Specimens B 95; C 88; F 6, 11 *a*, 11 *b*.)

In some silicified leaves of this species from near Nipania, found by Mr. Hobson of the Geological Survey, a horizontal series of mesarch bundles of the cycadean type have been observed by one of us[1]. This seems to place beyond doubt the cycadean affinities of this plant, already suspected on other

[1] These specimens (and some others collected since) are being described in a separate paper.

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grounds. None of our specimens are petrified, but many of them show clearly on the broad midrib a number of parallel veins which no doubt correspond to the vascular bundles just referred to.

We are inclined to think that the leaves from Tonkin described by Zeiller[1] under the name *T. spatulata* (McCl.) belong to a distinct species. The veins in Zeiller's specimens are very prominent, almost like transverse ribs, a feature which we do not find in any of the numerous specimens we have examined.

TÆNIOPTERIS McCLELLANDI O. and M. sp.

(Specimen F 15.)

1863 *Stangerites McClellandi* O. and M. sp. in I. 1. XXIII. 1–3.
1869 *Angiopteridium McClellandi* (Morris) in Schimper. Traité I, p. 605.
1877 *Angiopteridium McClellandi* in Feistmantel I. 2. XLVI. 5, 6.
1877 *Angiopteridium McClellandi* in Feistmantel I. 3, p. 10.
1879 *Angiopteridium McClellandi* in Feistmantel I. 4. I. 14–16; and 1, 4. II. 4.
1922 *Tæniopteris McClellandi* in Sahni, Table II.

We prefer to adopt the old generic name *Tæniopteris* (Brongniart 1828) both on the ground of priority and because it does not imply affinities which in the absence of fructifications cannot be proved. As regards the specific name, Oldham and Morris hinted (1863, p. 33) that McClelland's fragmentary specimen, described under the name *Tæniopteris acuminata*[2] may be identical with their *Stangerites McClellandi*. If this identity could be proved, the older name *acuminata* should stand. But assuming that McClelland's fig. 2 is correct, there would be no doubt that the two plants are distinct, for McClelland's figure shows numerous anastomosing veins. In view of this uncertainty the specific name *McClellandi* is here adopted.

Our specimen shows several pinnæ in relation to a thick cylindrical rachis with the characteristic joints and longitudinal ridges.

TÆNIOPTERIS (? NILSSONIA) spp.

(Specimens A 102, 104, 111, 114; F 142; unknown locality 126-127.)

These are all fragments which cannot be placed definitely in either *Tæniopteris* or *Nilssonia*.

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[1] Zeiller (1902), pl. XIII, figs. 6–12.
[2] McClelland (1850), pl. XVI, fig. 2, p. 53.

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NILSSONIA (? ANOMOZAMITES) FISSA (Fst.)

(Pl. 15, figs. 27–29.)

(Specimens A 100, 102, 104, 111; B 94, 95, 96; C 89; unknown locality 126.)

1863 *Pterophyllum* ? Oldham and Morris I. 1. XII. 2–5.
1877 *Pterophyllum fissum* Fst. I. 2. XXXIX. 2–4.
1879 *Anomozamites fissus* Fst. I. 4. VII. 11–13 (Vemavaram).
1886 *Anomozamites fissus* Fst. IV. 2, p. 36.
1920 *Nilssonia fissa* Seward and Sahni . . . p. 32, pl. IV, fig. 39.

Localities B and C are specially rich in this species, of which many well-preserved specimens were found showing the venation and characteristically incised lamina, narrowing proximally into the petiole. The midrib is 1½ mm. to 2 mm. in width, and shows longitudinal striations which no doubt represent vascular bundles, as in *Tæniopteris spatulata* (see above).

In 1920 the species was transferred from *Anomozamites* to *Nilssonia*[1]; although the lamina was not continuous over the rachis, it was believed that the specimen was seen from the lower side. In our numerous fresh specimens, however, the lamina is never continuous over the rachis, and as it seems unlikely that all these specimens are seen from the lower side the previous reference to *Anomozamites* may after all have been correct.

NILSSONIA MORRISIANA (O. and M.)

(Specimens D 40, 52, 61, 62.)

NILSSONIA PRINCEPS.

(Pl. 15, fig. 30.)

(Specimens D 40, 44, 49, 52, 55, 62, 64, 66; E 30; F 2, 5, 14, 16.)

The figured specimen is the apical part of a frond (F 16) showing a well-preserved denticulate margin.

Seed probably of NILSSONIA *sp.*

(Pl. 11, fig. 9.)

(Specimen F 5.)

The concave impression figured is evidently one of the two valves of a bicarinate seed, the shell having split along the

[1] Seward and Sahni (1920), p. 32.

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principal plane. The external surface of the shell was covered with warts. The chalazal and micropylar ends are well defined, the testa being distinctly thicker at the micropylar end.

From Rhætic and Jurassic beds in other countries very similar seeds have been attributed by Nathorst and Gothan to species of *Nilssonia* with which they were found associated.

In 1909, Nathorst described several species of *Nilssonia* associated with rather characteristic tuberculate seed impressions. Some of these seeds, which in surface characters are not unlike the seed here figured, he attributed to *N. pterophylloides*, others of a spherical form he assigned to *N. brevis* and *N. polymorpha*.[1]

In 1914, Gothan[2] figured several seeds with a tuberculate testa as the seeds of *N. acuminata*. At the same time he expressed the view (*loc. cit.*, p. 40) that some cycadophyte seeds described by Krasser[3] from Sardinia also belonged to the same genus, which is known to occur in the form of leaf impressions in the Sardinian rocks.

Quite recently Harris[4] has attributed to *N. incisoserrata*, a Greenland species newly described by him, some tuberculate seeds, sometimes found attached in pairs as in *Beania*. He finds that the tubercles are due to masses of resin embedded in the integument, and brings out much other structural detail.

It is very probable that our seed also belongs to a species of *Nilssonia*, a genus strongly represented in the Rajmahal series. On the same block as the seed there is a leaf of *N. princeps*, but it would be unwise without further evidence to assign the seed to this species. Further search at Onthea may reveal more specimens, possibly attached, and may indirectly throw light upon the affinities of *Beania gracilis* and similar forms, which have been variously assigned to the Ginkgoales and to the Cycadophyta.[5]

CONIFERALES.

Ontheodendron gen. nov.

Generic features. Lax cylindrical cones bearing one-seeded ligulate scales placed parallel to the axis. Ovule detachable from the scale, placed in an adaxial pit near the base.

This genus is based on some fragmentary specimens of ovuliferous cones, hitherto found only at Onthea (locality F, see map). In their fundamental characters it resembles the Araucarineæ, for the scales are ligulate, with a single adaxially placed ovule.

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[1] Nathorst (1909), p. 25, pl. 6, figs. 1, 8 and 14–16; see also Seward (1917), p. 567, fig. 619A.

[2] Gothan (1914), p. 39, pl. 30, figs. 2–4; see also Gothan (1921), pp. 294, 295.

[3] Krasser (1912), pl. II.

[4] Harris (1932), p. 52, pl. 5, figs. 3–6, 15.

[5] Seward (1917), pp. 502-503.

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At first we were inclined to refer the specimens provisionally to *Araucarites*.[1] But the lax, cylindrical form of the strobilus, with the scales placed parallel to the axis, and the fact that the seeds were not completely embedded in the scale as in *Araucaria*, are features sufficiently distinct to justify the creation of a new genus. The scales are not bent at right angles, into a horizontal seed-bearing part and an up-turned distal limb, but the seed-bearing part is continued without a change of angle into the much elongated gradually tapering distal part of the scale. Only one species is yet known.

Ontheodendron Florini sp. nov.

(Pl. 15-16, figs. 31–34.)

(Specimens F 10 *a*, 10 *b*.)

Diagnosis. Cones at least 8 cm. long by 2 cm. broad. Outlines of scales varying from broadly ovate at the base of the cone, to ovate-lanceolate and finally linear-lanceolate in the middle and distal parts, respectively. The seeds vary in shape with the form of the subtending scale, from broadly ovate to narrowly elliptical. Ligule narrowly linear.

We have fragments of three different cones referable to this species, all of which are shown in our figures. They were found in a single block at Onthea. The main specimen (F 10 *a*) is shown natural size in pl. 16, fig. 31 ; it includes the middle and upper part of the strobilus, where the scales are lanceolate or linear-lanceolate. Fig. 32 shows what is, no doubt, the basal part of a cone of the same species ; the scales as well as the ovules are here relatively much shorter and broader. The prolonged apices of the scales are only partially preserved ; their surface shows a faint longitudinal striation. In the scales shown in figs. 31, 32 there is no clear evidence of a ligule but in fig. 33 is drawn part of a third cone in which each scale shows a distinct median groove which probably indicates the presence of a ligule. In these scales and in the detached scale shown in fig. 34 the ovule appears to have dropped off, but its position is marked by a distinct rhomboid depression which is continued distally into the median groove just mentioned. The fact that the ovule could become detached from the scale shows that it was not fused to the latter, as in *Araucaria*, but was placed freely upon it, although partly sunken in a pit. The appearance of the specimens shown in fig. 31, 32, where the ovules are seen *in situ*, also confirms this view.

As regards the affinities of the plant, they seem to be clearly with the Araucarineæ. The elongated form and lax

[1] Sahni and Rao (1932).

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character of the "cone" is no doubt in striking contrast with the cones of any known members of that group, whether living or fossil.[1] But the general characters of the individual scale, with the single adaxially placed ovule, may be taken as a safe index of araucarian affinity.

A comparison with detached scales such as *Araucarites cutchensis* and similar species from Jurassic rocks in various countries, is not quite satisfactory. Firstly, there is no means of comparison with any possible variations in the form of the scales in different parts of the cone; secondly, there is no clear evidence that the ovules in *A. cutchensis*, etc. were detachable as in our species.

We have pleasure in naming the Rajmahal cones after Dr. R. Florin of Stockholm.

Araucarites sp.

[Specimens B 96 (1), B 96 (2).]

Triangular impressions, probably detached ovuliferous scales of one of the Araucarineæ. An oval depression or elevation (as the case may be) along middle probably marks the position of a seed.

Elatocladus conferta (O. and M.).

(Specimen F 11 *b*.)

Elatocladus tenerrima (Fst.).

(Specimens C 80 (?); F 15, 17.)

Elatocladus sp. *α*.

(Specimens F 19 *b*, 23 *b*.)

A shoot no doubt specifically identical with one figured by Feistmantel[2] wrongly under the name *Palissya indica*. As stated elsewhere[3] Feistmantel's specimen recalls the tertiary species *Sequoites langsdorfii*.

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[1] The only fossil cones known to us which are referable to this group are of the compact type: (*a*) *Araucarites sphærocarpus* Carr. (see Seward, 1919, p. 256, fig. 737); (*b*) *Araucarites ooliticus* (Carr.), *ibid.*, fig. 738-739; (*c*) *Araucarites mesozoica* Walkom (1918, p. 11, pl. 2, fig. 1); *Araucarites* sp., *ibid.*, pl. 2, fig. 10; *Araucarites mirabilis* Spegazzini (see Spegazzini 1924, Gothan 1925 under the name *Araucaria Windhauseni*); *Conites araucarioides* Gothan (1927, pl. XV).

[2] Feistmantel (1881), p. 151, pl. II, figs. 3, 3*a*.

[3] Sahni (1928), pp. 15-16.

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ELATOCLADUS sp. β.

(Specimen A 98.)

A much branched shoot with linear slightly falcate leaves having decurrent bases. On a few of the leaves a single median vein is faintly visible. The preservation is too bad to admit of a specific determination.

BRACHYPHYLLUM EXPANSUM (Sternb.).

(Specimens A 112, 113; E 27; F 7.)

INCERTÆ.

PODOZAMITES sp.

(Pl. 16, fig. 35.)

(Specimens F 19 *a*, 19 *b*, 23 *a*.)

The impressions shown in the photograph are linear, about 1 cm. wide in the middle, narrowing gradually towards the two ends. The texture appears to have been coriaceous, the lamina being marked with 7 or 8 coarse parallel veins.

It is not possible to say whether the fragments represent simple leaves or pinnæ of compound leaves. Their systematic position is therefore quite uncertain. They may for the present be placed in the form genus *Podozamites*, which includes foliar remains of both cycads and conifers. In their coriaceous texture and prominent veins, which give them an appearance like the pinnæ of some modern palm leaves, they differ markedly from the impressions from the Jabbalpur beds referred by Feistmantel to *P. lanceolatus*.[1] Our specimens agree closely and are probably specifically identical with some fragments regarded by Oldham and Morris[2] (I. 1. XV. 3) as the pinnæ of "*Pterophyllum Medlicottianum*". On the whole we are inclined to the view that they are cycadean rather than coniferous.

AXIS WITH SMALL SCARS.

(Pl. 11, fig. 6.)

(Specimen A 110.)

Fragments of an axis bearing small oval or elliptic scars at irregular intervals. There is no evidence as to the nature of the scars, hence no views can be expressed as to the affinities of the plant, but reference may be made to more or less similar

1 Feistmantel (1877 *a*), II. 2. IV. 1–10.
2 Oldham and Morris (1863).

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structure previously mentioned in the literature. Rhizome-like organs of unknown affinity have been figured by Feistmantel from the Umia beds of Kach [1] and from the Athgarh sandstone (Jurassic) near Cuttack.[2] An undoubted fern rhizome which bears stumps of leaves as well as scars of adventitious roots was figured by Prof. Seward from the Jurassic of Sutherland [3]. *Rhizomopteris Etheridgei Sew.* from the Jurassic of Victoria [4] is also probably a fern, for it bears oval or reniform scars with a C-shaped leaf trace.

cf. Cycadolepis Saporta.

(Specimen F 24.)

Two flat scale-like organs marked with divergent occasionally forked veins. The margin is not preserved. It is probable that these fragments are specifically identical with those which were figured by Feistmantel from the Rajmahal Hills [5] under the name *Cyclopteris Oldhamia* Fst., but whose real affinities are quite uncertain. Comparable structures have been recorded by Prof. Seward [6] from the Jurassic of Sutherland under the name *Aphlebia* sp., and also from the Jurassic of Cape Colony [7] under the name *Cycadolepis Jenkinsiana* (Tate).

On the whole our specimens show a greater resemblance with the South African scales than with that from Sutherland, but in admitting this resemblance we do not wish to imply that they necessarily belong to a Cycadean plant. The reference of Feistmantel's Rajmahal specimens to *Cyclopteris* does not seem to us to be at all justified.

Axis with elliptical scars.

(Pl. 15, fig. 30 right.)

(Specimens F 14, 16 counterparts.)

A cylindrical axis bearing a number of raised elliptical scars, each having a central dot. The scars are of almost uniform size and shape (1·5 by about 1 mm.) and remind one of the clean scars left by the deciduous needles of *Abies*, the central dot representing a vascular bundle.

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1 Feistmantel (1876), II. 1. IV. 4.
2 Feistmantel (1877 *b*), *Rec. G. S. I.*, vol. X, p. 70; figs. 2–6.
3 Seward (1911), p. 671, pl. II, fig. 40.
4 Seward (1904), pl. XVII, figs. 31, 32.
5 Feistmantel (1877), I. 2. XXXVI. 1-2; I. 2. XXXVII. 5-6.
6 Seward (1911), p. 674, Text-fig. 6.
7 Seward (1903), p. 29, pl. 4, figs. 3–6.

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Axis with large polygonal scars.

(Specimen F 142.)

The scars are usually hexagonal and contiguous, the lines of separation being very distinct though thin. In the centre of each polygonal area there is a transversely elongated depression. The specimen seems to represent a mould from the surface of a stem bearing large appressed leaves, the central depression probably representing the leaf tip. The hexagonal scars also remind one of cupressineous cone-scales, each with a projecting umbo, but the form of the axis is not like that of a cone.

Peculiarly branched axis of unknown plant.

(Pl. 15, figs. 36, 37.)

(Specimen C 78.)

Several of the branches have peculiar processes on the lower side, just near their points of origin from the main axis.

Axis with large rhomboid scars.

(Pl. 14, fig. 26.)

Found by Mr. W. N. Edwards, who kindly allowed us to figure it. No definite opinion can be expressed about the affinities of this fossil. The general appearance recalls that of some *Bucklandia* stems (e.g. *B. Yatesii*)[1] but the rhomboid areas show no sign of vascular bundles, and there is no proof that the stem belongs to a cycad. It is not impossible that it is a coniferous axis bearing large appressed leaves of the *Brachyphyllum* type.

Seeds, probably Gymnospermous.

(Specimens A 102, 112; B 94, 95; D 66 *a*, 66 *b*; F 16.)

Silicified Wood.

(Specimens E 38, 39.)

Probably coniferous, but too badly preserved to be identified.

Finely tuberculate flat impressions.

(Specimen F 12 *b*.)

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[1] Seward (1917), p. 485, fig. 577.

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Explanation of Plates 11–16.

(The figured specimens with the exception of the original of fig. 26 in pl. 14 are preserved at the Botanical Department, Lucknow University.)

Plates 11-12.

Fig. 1. Marattiopsis macrocarpa Morris sp. Fertile pinnæ. F 18. Natural size.
Fig. 2. *Ibid.* Fertile pinnæ showing synangia. F 18. × 3.
Fig. 3. Cladophlebis indica O. and M. sp. Fertile and sterile pinnæ. D 67. Natural size.
Fig. 4. *Ibid.* Some fertile pinnæ showing sori. D 67. × 3.
Fig. 5. *Ibid.* Fertile pinnæ D 67. × 7.
Fig. 6. Axis with scars. A 110. Natural size.
Fig. 7. Ptilophyllum. cf. cutchense McCl. sp. F 5. Natural size.
Fig. 8. *Ibid.* Two pinnæ from the same specimen. × 8.
Fig. 8 *a*. *Ibid.* Diagrammatic sketch showing surface characters. × *ca.* 19.
Fig. 8 *b*. Ptilophyllum acutifolium (O. and M.) near Nimgachi, 141. Diagrammatic sketch showing surface characters. × *ca.* 22.
Fig. 9. Seed, prob. of Nilssonia sp. F 5, × 5.
Fig. 10. Otozamites parallelus (Fst.). A portion of a frond. A 103. Natural size.
Fig. 11. *Ibid.* A few pinnæ showing the venation. A 103. × 2½.
Fig. 12. Zamites proximus. Fst. A few pinnæ. F 4. Natural size.
Fig. 13. Zamites proximus. Fst. The same, showing the veins and scars of pinnæ. × 3.
Fig. 14. Cycadean stem, showing alternating zones of broad and narrow scars. F 141. Natural size.

Plates 13-14.

Fig. 15. Pterophyllum incisum sp. nov. Specimen 129, loc. unknown. Natural size.
Fig. 16. *Ibid.* A few pinnæ showing the incised tips. × 3.
Fig. 17. Pterophyllum sp. α. A 116. Natural size.
Fig. 18. *Ibid.* sp. β. D 41. Natural size.
Fig. 19. Dictyozamites indica (Fst.) A part of a frond. F 9. Natural size.
Fig. 20. *Ibid.* A few pinnæ from the same specimen. F 9. × 10.
Fig. 21. *Ibid.* An unusually small leaf. F 7. Natural size.
Fig. 22. *Ibid.* Basal part of a frond. F 9. Natural size.
Fig. 23. Dictyozamites Hallei. sp. nov. Parts of two fronds. F 15. Natural size.
Fig. 24. *Ibid.* F 143. Natural size.
Fig. 25. *Ibid.* A few pinnæ showing the venation. F 15. × 7.
Fig. 26. Axis with large rhomboid scars, found by Mr. W. N. Edwards. Natural size.

Plates 15-16.

Fig. 27. Nilssonia (? Anomozamites) fissa (Fst.), basal part of a leaf. B 96 (1). Natural size.
Fig. 28. *Ibid.* B 96 (2). Natural size.
Fig. 29. *Ibid.* Part of the above specimen showing details. × 4.
Fig. 30. Nilssonia princeps. Part of a leaf showing the denticulate margin. On the right is an axis with elliptical scars. F 16. Natural size.

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Fig. 31. ONTHEODENDRON FLORINI sp. nov. A lax strobilus showing ovuliferous scales. F 10 (a). Natural size.
Fig. 32. *Ibid.* The basal part of another strobilus. (F 10 b). Natural size.
Fig. 33. *Ibid.* Part of a third strobilus. F 10 b. Natural size.
Fig. 34. *Ibid.* Detached scale. F 10 b. Natural size.
Fig. 35. PODOZAMITES sp. F 19. Natural size.
Fig. 36. Peculiarly branched axis. C 78. Natural size.
Fig. 37. *Ibid.* C 78. × 3.
Fig. 38. WILLIAMSONIA sp. cf. W. SEWARDIANA Sahni. Near Nipania. × 2.

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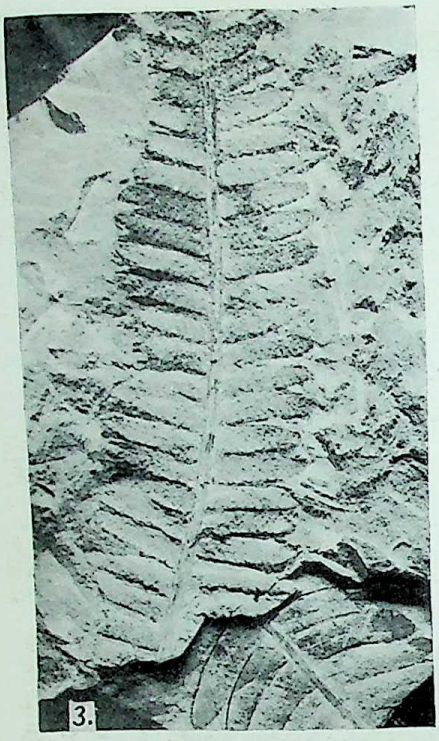
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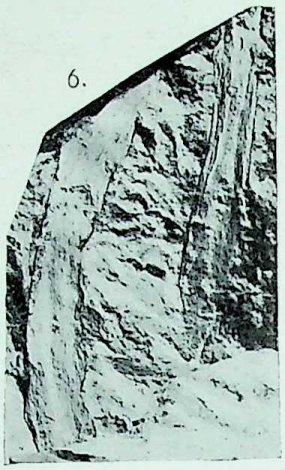
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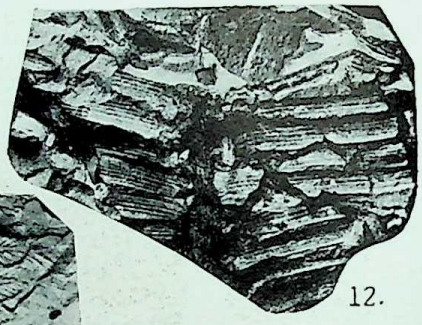
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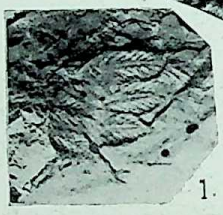
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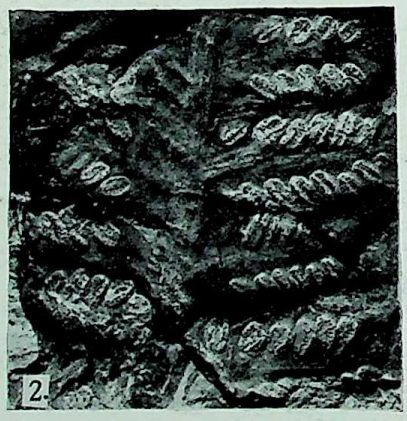
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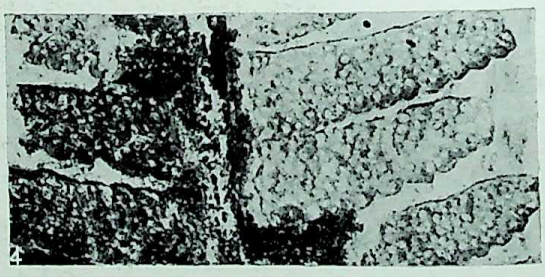
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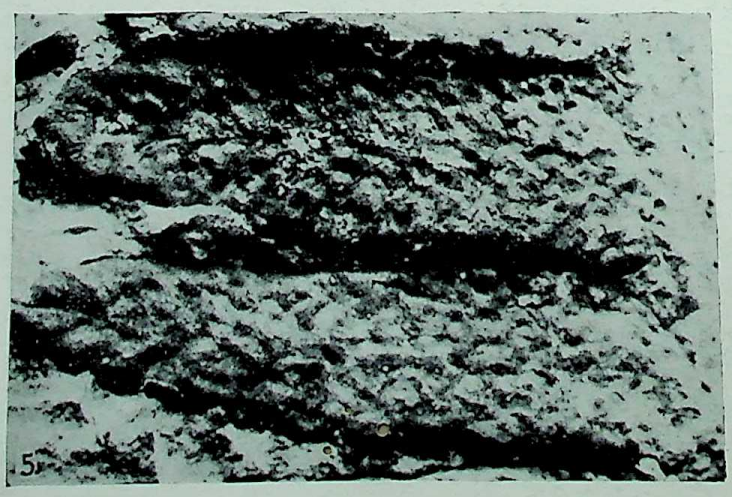
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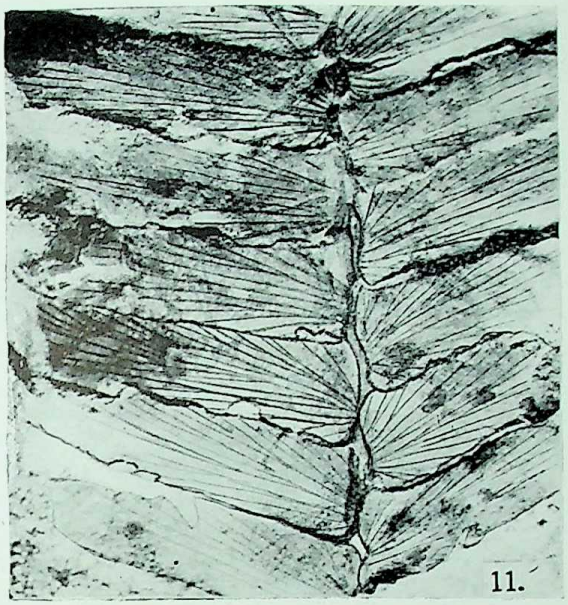
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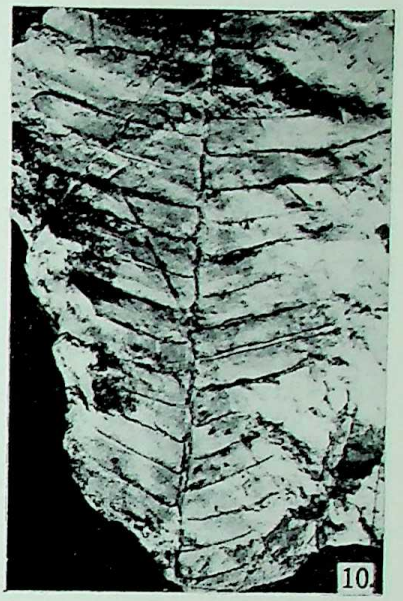
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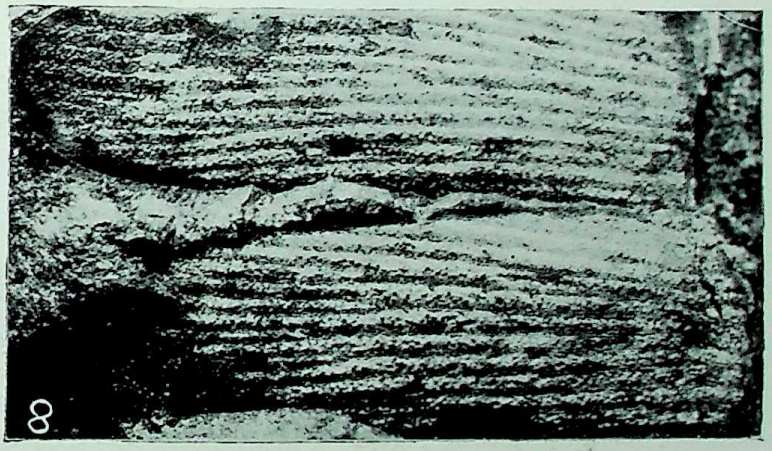
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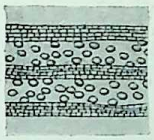
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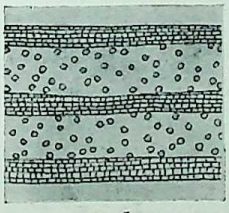
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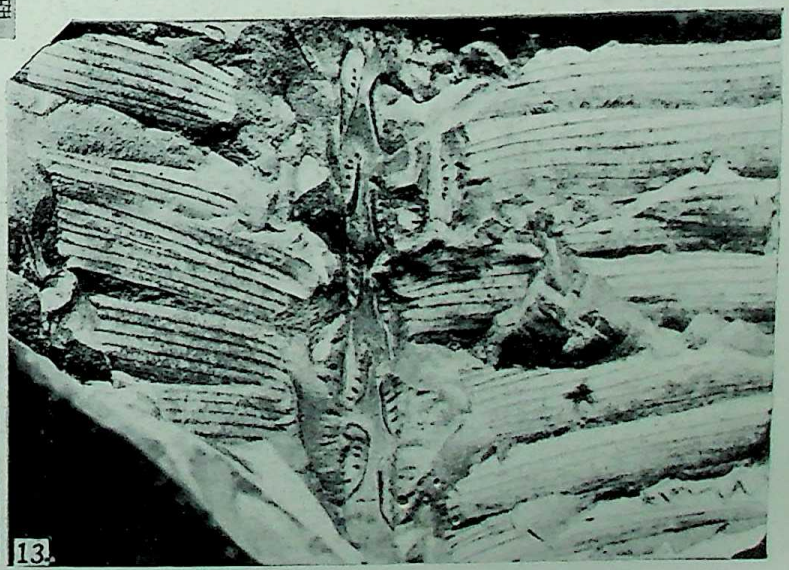
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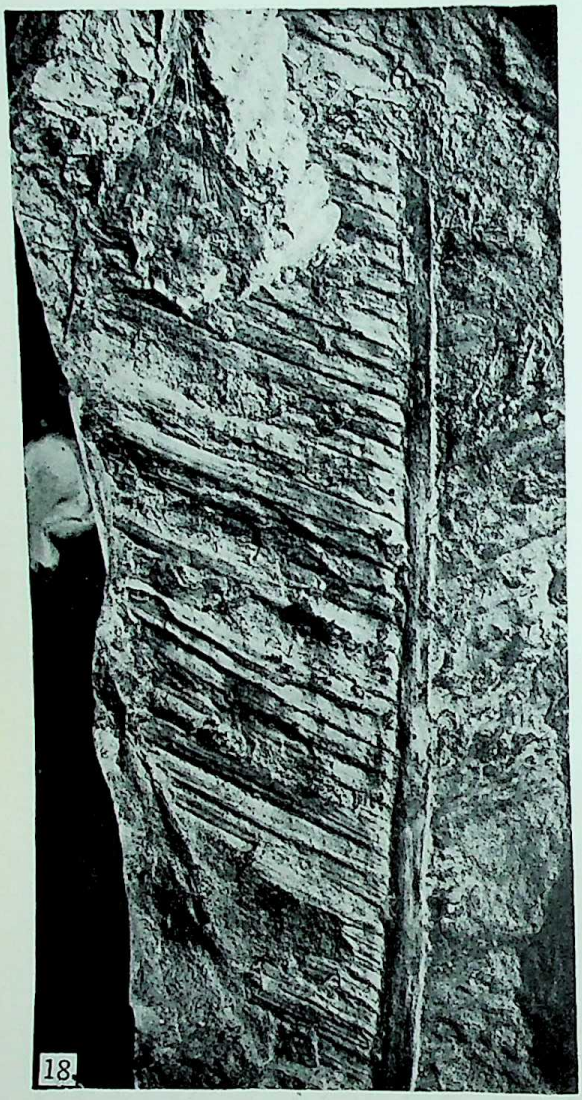

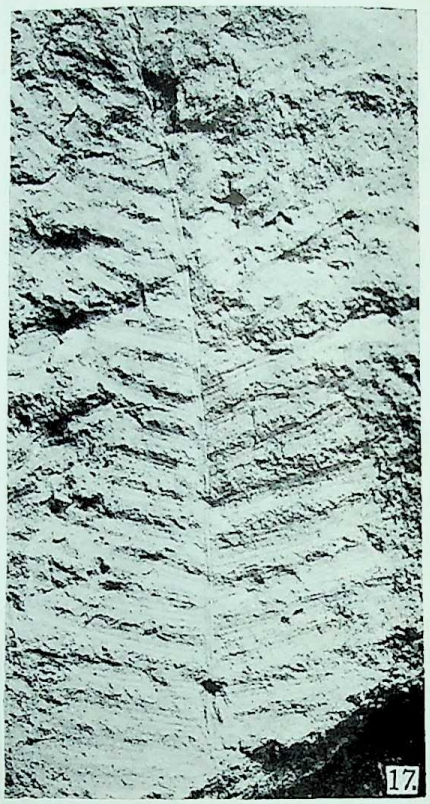

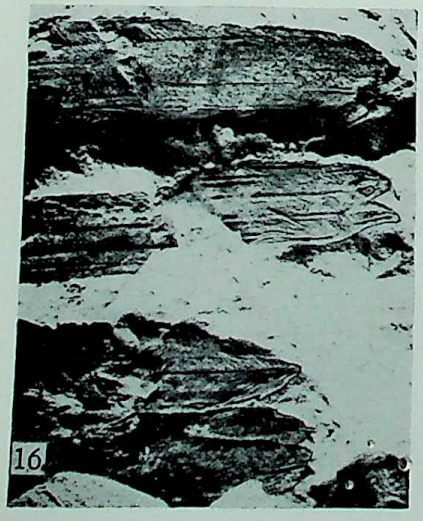

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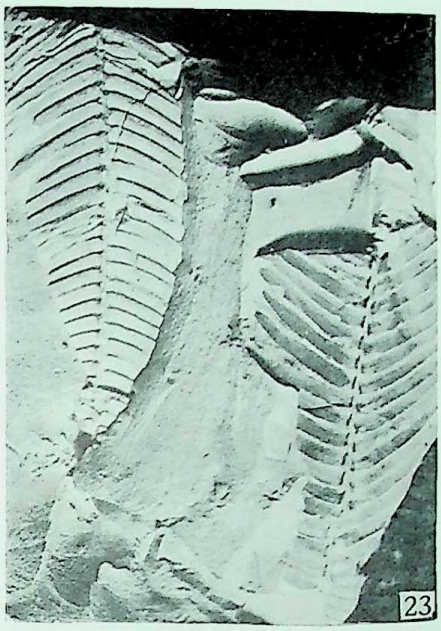

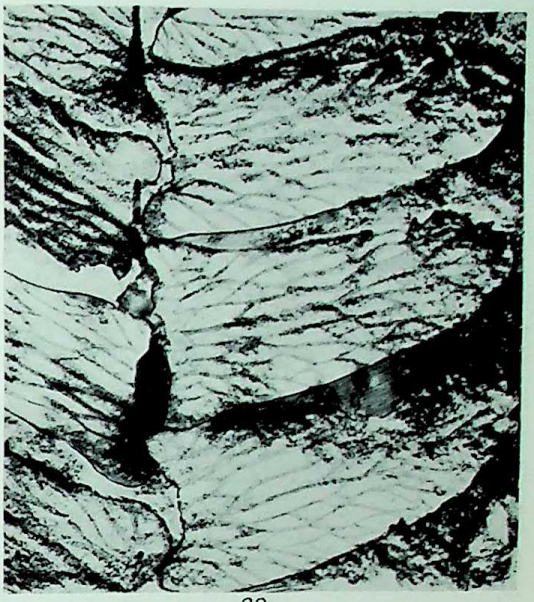

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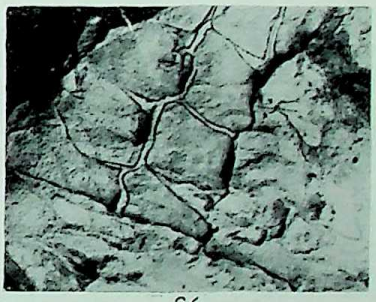

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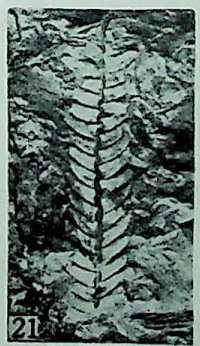

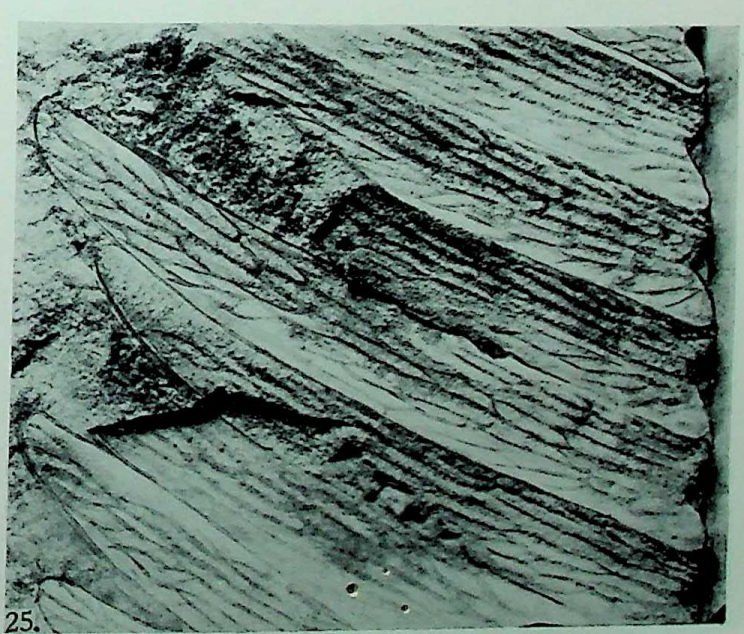

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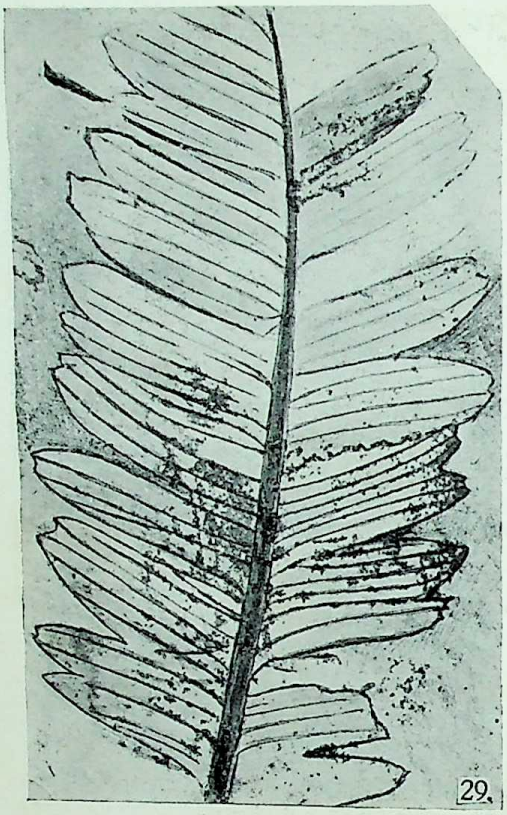
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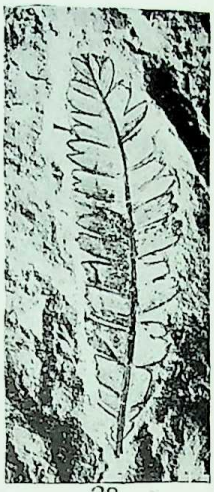
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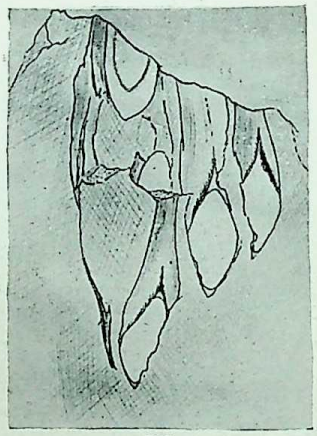
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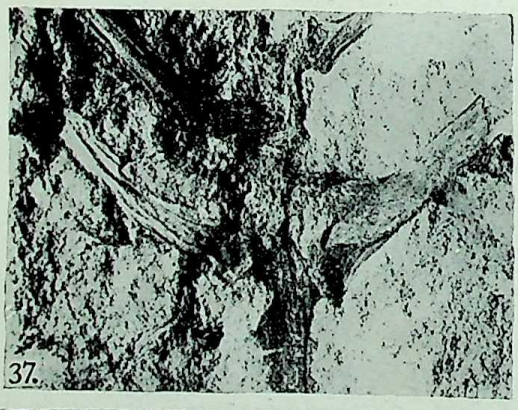
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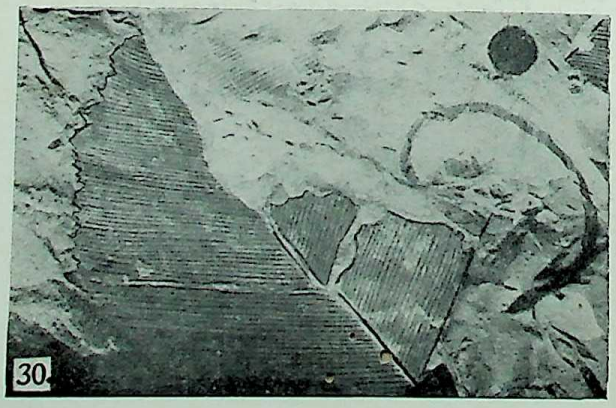
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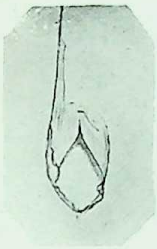

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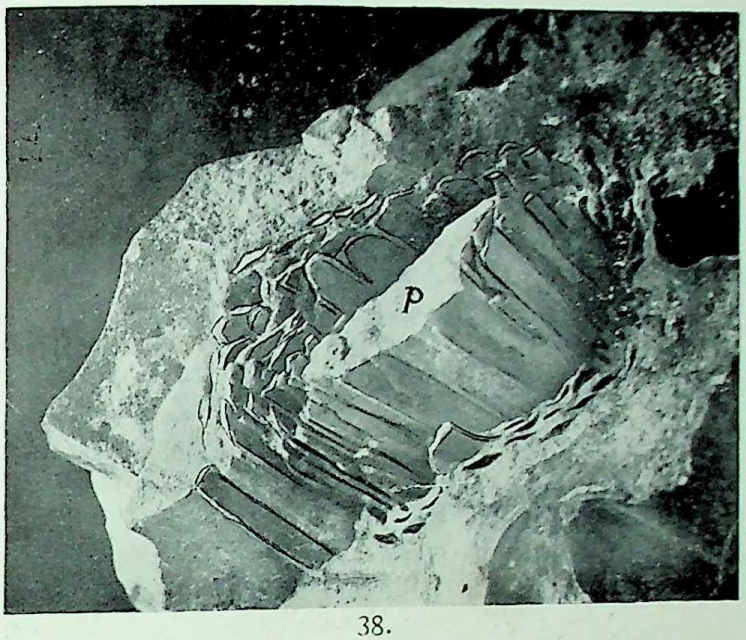

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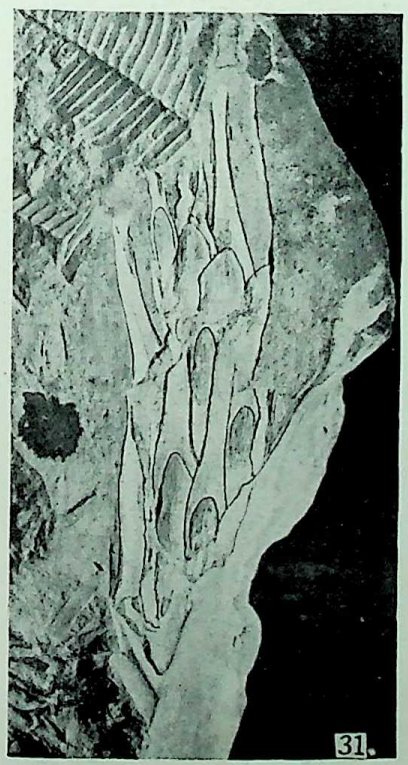

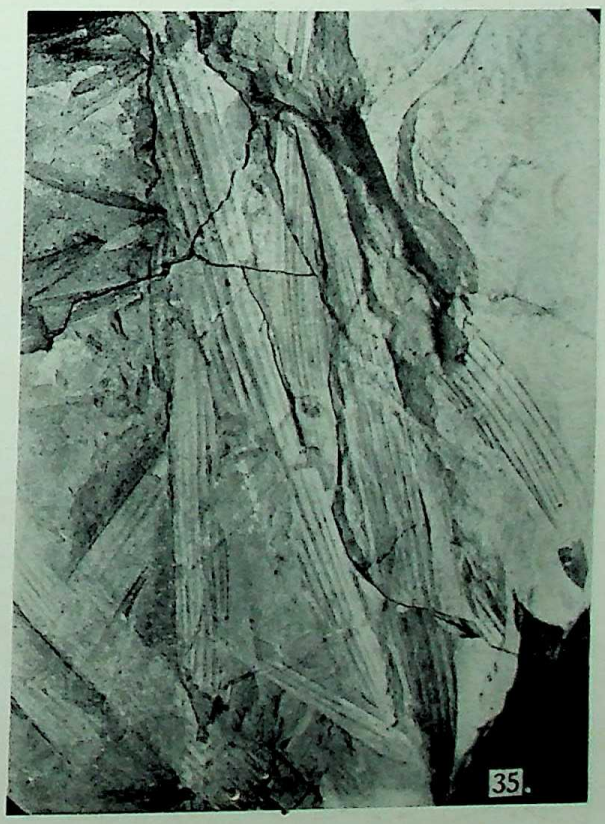

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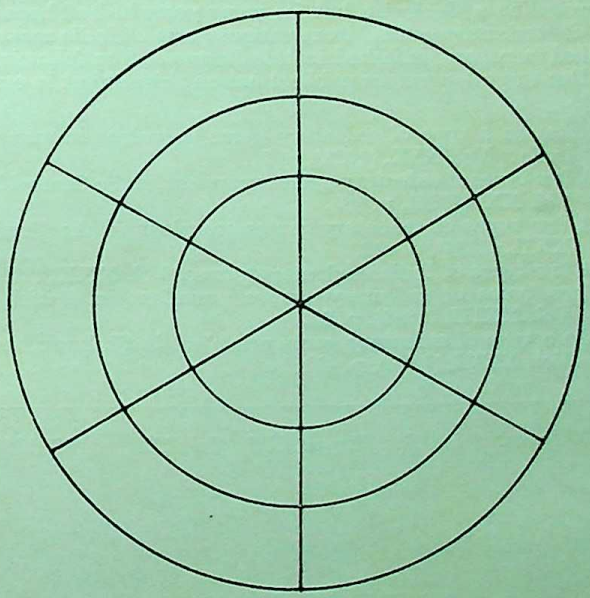
On a Type of Sedentary Game known as *Pretoa*.

By H. C. DAS-GUPTA.

The type of sedentary game that is being described in this short communication was first seen being played at Sealdah by some railway coolies belonging to the district of Chapra. The diagram used for the game consists of three concentric circles devided into six parts by three diameters, as is shown in the figure given below. Two persons are necessary for playing this game, nine cross-points on three contiguous radii belonging to each of them. Pieces of some hard and distinctive object are placed on each of these points and



the game is started. In the first move a piece is shifted to the centre and then the usual rule of capture by jumping over the piece of the adversary, if the cross-point immediately next to it is vacant, is followed, quite irrespective of whether the pieces are on the diameter or on the circumference, for the pieces may be moved not only on the radii or the diameters but also along the arcs or the circumference.

The game is apparently a Bihar game and may be compared with a game known as *gol-ekuish* that is prevalent

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in the Central Provinces and has been previously described by me,[1] the only difference being in the number of the concentric circle of which there are seven in the case of the Central Provinces game. A comparison of the two games also indicates that the Central Provinces game may have been derived from the Bihar game by increasing the length of the diameters and adding a few more concentric circles, the derivation being apparently through some intermediate stages which have not as yet been found.

I must confess that I am not sure if I ascertained the name of the game accurately. At first I was told that the name of the game was *shuia*, a term which I could not get explained by any one. On further enquiry, it transpired that the name was *pretoa*, the term having reference to the circular movement of the pieces used in playing, a type of movement which is attributed to the ghosts or *pretas*.

[*Editor's Note.*—We have to record, to our very great regret, the death of the Author on the 1st of January, 1933. Professor Das-Gupta was by profession a Geologist, but for many years he had been collecting samples of 'sedentary games' from various parts of India most of which he described in papers published in this *Journal*. The following is a list of Prof. Das-Gupta's previous publications on this subject in our *Journal*. —J.v.M.].

(1) Notes on a type of sedentary game prevalent in many parts of India. Vol. XIX, (1923), p. 71.
(2) A few types of sedentary games prevalent in the Central Provinces. Vol. XX, (1924), p. 165.
(3) A few types of sedentary games prevalent in the Punjab. Vol. XXII, (1926), p. 143.
(4) A few types of Indian sedentary games, Vol. XXII, (1926), p. 211.
(5) Two types of sedentary games prevalent in British Garhwal. Vol. XXIII, (1927), p. 297.
(6) On a type of sedentary game prevalent in Shahpur, the Punjab. Vol. XXVI, (1930), p. 411.

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[1] *Journ. Asiat. Soc. Bengal*, N.S., Vol. XX, p. 167, 1925.

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A Note on the Sedentary Game known as *Pretoa*.

By Sunder Lal Hora.

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In the preceding article the late Professor H. C. Das-Gupta has given an account of a sedentary game under the name *Pretoa*, but in concluding the note he has expressed doubts as to the accuracy of the name used. While correcting the proofs of Prof. Das-Gupta's article, it seemed to me desirable to collect further information about the game so as to complete the account. Quite a number of the durwans, chaprasis, and farashes employed in the Indian Museum come from Chapra and the adjoining districts of Bihar, so I sent for some of them and made enquiries about the game. One of the farashes was even sent to Sealdah to collect further information from the railway coolies whom Prof. Das-Gupta had seen playing the game. The result of all this investigation lasting over a week is given below.

The game is known under several names in Bihar, and in each name reference is made to some feature of the game. In the district of Ballia, which is to the west of Chapra, it is usually called *Pretoa*, but is also known as *Supa-beni*. In both the names reference is made to the movement of the pieces which may be moved along the diameters as well as along the arcs of the three concentric circles. Prof. Das-Gupta has already explained the etimology of *Pretoa* (from *Pretas* or ghosts); while *Supa-beni* is the vernacular name of swallow, a bird which in its flights circles round and round as well as darts straight forwards. In the district of Arrah the game is known as *Chakwa-boh* and *Nao-gutiya*. *Chakwa-boh* is the vernacular name used for a kind of diving bird, probably the Indian little Grebe—*Podiceps ruficollis capensis* (Salvaclori), which, when alarmed, dives under water and re-appears at unexpected points, so that there is no limit to the direction of its movements. In this name, therefore, reference is made to the type of movement of the pieces in this game. *Nao-gutiya* means a game which is played with nine pieces belonging to each person. This is a general designation which applies to several types of sedentary games played with nine pieces.

It may be remarked that most of the indigenous sedentary games are gradually being replaced by games of cards, etc. In making enquiries about *Pretoa* I have formed an impression that the younger generation has very vague ideas about these

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games. For example, I was told that this game is called *Bagha-guti*, which in reality is quite distinct, though that is also played with nine pieces. I was also informed that sometimes this game is played with 12 pieces (*Bara-gutiya*) and in that case there are four instead of three concentric circles. This will lend further support to Prof. Das-Gupta's view that *Gol-ekuish* [1] of the Central Provinces is only a variation of *Pretoa*. There would seem to be no difference in the nature of play, whatever the number of concentric circles; more circles will naturally mean more pieces to play with, and consequently more time needed to finish the game. Probably the nature of the intermediate types depends upon the amount of leisure hours to be spent.

I have incidentally collected two superstitious beliefs associated with this game. If young boys indulge too much in playing this game, the elderly people warn them that there will be a heavy downpour and consequently a deluge. The second belief is that if this game is played too much, then the cereals will become dear and consequently there will be famine. I have no doubt that both of these beliefs are meant to dissuade young boys from spending too much time on these games instead of attending to their regular work of cultivation. I am further informed that this particular game (as is also the case with other types of sedentary games) is usually played during the rainy season when the agriculturists have more leisure from the care of their crops.

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[1] *Journ. Asiat. Soc. Bengal*, N.S., Vol. XX, p. 167, 1925.

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The Social and Religious Ceremonies of the Chākmās.

By P. C. Basu.

(Communicated by Dr. B. S. Guha.)

The interesting tribe, known as the Chākmās, that live in the hilly districts of Chittagong and Tipperah, have attracted considerable attention from the surrounding Bengalee people by reason of many peculiar features in their manners and customs. They are undoubtedly a branch of the Mongolian family and have migrated to their present habitat from Arakan. Owing to close contact with the Bengali-speaking people of the plains they have considerably changed their native language and now speak a mixed form of speech. Signs of disintegration of their original culture are not absent in their social institutions but fortunately the latter in the main still retain their original character. The existing materials regarding the customs of this people are not extensive but the writings of Capt. T. H. Lewin, Émil Reibeck, R. H. Sneyd Hutchinson, Sir Herbert Risley and the praiseworthy attempt of Mr. S. C. Ghose and others give us a fairly good general knowledge. In the present paper I have attempted a detailed analysis of the existing data with a view to finding out the basic forms in which the institutions may ultimately be classified and also to indicate the lines along which further investigations in the field appeared to me to be necessary.

But before doing so it would not be unprofitable to write a few words regarding the general appearance and mode of life of this people.

Appearance.

The Chākmās are of short to medium stature, stoutly built with well-developed muscles of the calf of the leg due probably to the hilly nature of the country in which they are living. The hair is often straight, the face flat with prominent zygomatic arches. The head form varies from mesocephaly to brachycephaly and the nose from mesorrhiny to platyrrhiny. The complexion is yellowish brown, the eyes oblique, the body hair scanty, and the moustache rare. The average Cephalic index obtained by Sir Herbert Risley[1] is 84·3 and the average Orbitonasal index is 106·4.

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[1] Risley, Sir H.—The Peoples of India, pp. 384-5, Calcutta, 1915.

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The Houses.

They live in thatched cottages built on bamboo poles. The floor is of split bamboo and is raised some six feet above the ground. The rooms are divided according to their use, e.g. the bedroom, the store-room, etc., in front of which lies the thatched verandah. Access to the house is by means of bamboo steps or footholds cut in the trunk of a tree which is placed either in the front or back and can be removed at night. Below the platform, shelters are made for pigs and fowls. Besides this, watch-houses from which the crops can be watched during cultivation are built on the highest spot in the fields.

Occupation, Food, and Drink.

The Chākmā women are always found to be engaged in some form of cottage industry and almost every woman is more or less acquainted with the art of *weaving cloth*. Dyeing is generally done by indigenous methods. In the technique of *basket-making* they show a surprising excellence. Cane work is only rarely found, bamboo forming the bulk of the materials used. *Boat-making* is also one of their principal occupations. They hollow out the trunk of a tree for their simple canoes, but are not acquainted with the art of making composite canoes which perhaps are not so useful for their hill streams.

Their most important occupations, as in the case of the Tipras and Maghs, is *jhum* cultivation, although nowadays some of them have adopted the plough cultivation. At first (January to February) a suitable forest area is selected; in March they begin to cut down the trees, leaving only the large ones. Then in April they set fire to it. The logs are afterwards removed and after the rains they make equidistant holes in the ground with the billhook and put all sorts of seeds mixed together in them. The shoots come out and weeding is done from time to time.[1] A large number of ceremonies follow during cultivation and the crops are collected when ripe.

The Chākmās from boyhood are expert *hunters* and in *fishing* they use nets, fishing baskets, hooks, etc.

Their food consists of rice, pulses, vegetables, fruits, tamarind, eggs, salt, milk, etc. They eat meat of all kinds including some frogs, snakes, pigs, goats, and tiger, but not the flesh of dogs, cows, or elephants. Chewing of betel leaves and smoking of tobacco are their favourite habits.

Drinking of a kind of rice-beer is very common amongst the Chākmās. It is one of the most important accompaniment of almost every festive occasion. Every house usually prepares its own drink.

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[1] Imperial Gazetteer of India, Vol. X, p. 321, Oxford, 1908.

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Formerly they used to cook in bamboo pots and carry water in gourd vessels. They did not know the use of ceramics but as a result of contact with the plains people they are now learning to use pottery.

Tribal and Social Organizations.

There are three subtribes among the Chākmās, namely, *Chākmā*, *Doingnak*, and *Tungjangya*.[1] Of these Doingnaks are thought to have broken off from the parent stem more than a century ago owing to a matrimonial quarrel. Outsiders who are often attached to Chākmā girls are sometimes admitted into the fold of Chākmā society. They have to spend a week in the house of the priest after which a festival takes place in which offerings, prayers, and various sacrifices are made. Their children pass as Chākmās in every respect.

They are divided into a large number of exogamous clans (*gosthis*). The *gosthi* is distinctly hereditary and membership is transmitted only through the male line. The woman changes her *gosthi* by marriage. In addition to the clans there is a territorial grouping known as the *gochha*. A *gochha* may include persons of various clans or *gosthis*. When a person leaves his own *gochha* and resides in another, he is named according to the other *gochha*, but the *gosthi* is not changed. Marriage within the same *gochha* is allowed.

As in the Tibetan and the Himalayan Limbus the name of the *gosthi* depends upon the peculiarities and achievements of the ancestors. Whether there was present in ancient times the so-called Dual Organization, we have no direct evidence. Data regarding this point at present are unfortunately lacking and the subject requires, therefore, careful field investigation before a definite answer can be given. But so far as we can trace, it seems that the entire tribe was divided into four *gosthis* or clans—*Dhurja*, *Kurja*, *Dhabana*, and *Piḍā Vanga* (the ancestors of which broke a wooden seat).[2]

Whatever may have been the conditions in the past, at the present time there are a large number of *gosthis* each of which consists of several families.

Decision of Disputes.

Disputes are first settled by the headman, then by the king, and finally by the superintendent. If mutual arbitration is not possible then a vessel filled with about one seer of rice is placed

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1 Risley, H. H.—The Tribes and Castes of Bengal, Vol. I, p. 169, Calcutta, 1891.

2 Ghose, S. C.—Chākmā jāti, p. 55; 1316, B.S.

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in front of the holy image of Buddha. Next morning the suspected accused is given that rice to chew. It is thought that if he is really guilty, he will not be able to chew that rice and would vomit blood. The guilty party, thus found out, is to be punished heavily[1] (a modification of this practice is found at present among the lower classes in the other districts of Bengal).

Ceremonies connected with Birth and Childhood.

During pregnancy the Chākmā woman may take any food she fancies. A ceremony known as the *Gangsala* (River house) ceremony is performed both before and after the delivery. In this a small hut is erected by the riverside. A betel-nut is placed inside a vessel, the mouth of the vessel being covered with a piece of cloth. A thread is coiled seven times round the neck of the vessel, one end of which is kept inside the house and the vessel is carried to the riverside hut only after some preliminary ceremonies. Then comes the worship, and sacrifices are offered. After their return the vessel is placed in a safe place and a pig is sacrificed.[2]

As soon as the child is born the father brings a basketful of dry earth, puts it close to the mother's bed and kindles on it fire, which is not allowed to be extinguished for five days. After this the earth is thrown away.[3] Usually the mother goes to bathe in a neighbouring river on the next day after delivery, holding a rope of cloth in hand, one end of which is lighted for fear of the evil spirits. During this period of ceremonial pollution the parents refrain from any household work and are strictly forbidden to take part in religious affairs. The midwife also observes these restrictions till the umbilical chord of the child falls off. When a child is born before marriage, recourse must be had to a special room for delivery, built for the purpose.

Great enthusiasm is expressed whenever a son is born. Feasts, amusements, etc., mark the occasion.

They have no special name-giving ceremony. Only the aged address the child by some nickname, sometimes the child is addressed by the name of the place, or of some mythical hero. Later when the child grows up a good name is suggested. The children suck the mother's breast for a considerable period. There is no special ceremony for the first putting of rice into the child's mouth.

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[1] Capt. T. H. Lewin—The Hill Tracts of Chittagong and the Dwellers therein, p. 75, Calcutta, 1869.

[2] Ghose, S. C.—Chākmā jāti, p. 229; 1316, B.S.

[3] Hutchinson-Sneyd, R. H.—Eastern Bengal and Assam District Gazetteers: Chittagong Hill Tracts, p. 27, Allahabad, 1909.

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The Piercing of the Ears.

The piercing of the ears usually takes place in the sixth or the seventh year. There is no special ceremony for this occasion. Generally a single aperture for each ear is made in the males and a large number of apertures for each ear in the females. The piercing is usually performed with a thorn.

Initiation.

The initiation ceremony is usually performed by the *Bhikshu* or *Sramana*. Generally it takes place on the days of full-moon in the months of *Chaitra*, *Baisakh*, *Āshaḍ*, *Aswin*, or *Magh*. When the child is about 8 or 9 years old, the head is shaved, and he is dressed with a sacred piece of cloth and sits facing west with a pitcher, a lamp, and a quantity of rice, etc., placed in front of him. Some seven turns of thread are passed round them and he promises to live according to the regulations necessary for the occasion. Then he bows down, pays the usual fees, and becomes a *Sramana*. Usually the vow is given up after some seven days but when it is continued throughout life the individual becomes *Raḍi* at first and then *Thakur*. No woman is admitted to this initiation ceremony.

Adolescence.

When a boy approaches puberty, he cuts the *jhum* himself and the ceremony is enjoyed by the relatives with plenty of amusements.

Bachelor's Dormitories.

Among the Chākmās there exist the institutions of dormitories for unmarried youths. The bachelors live in these dormitories under the supervision of a leader. The data available are not clear regarding the existence of such dormitories for unmarried girls. Further investigations regarding this as well as the rules and regulations of these dormitories are called for.

Ceremonies connected with Marriage.

I have already mentioned that the clan is strictly exogamous, although slight violations have taken place in some cases. I have also pointed out that marriage is allowed within the same *gochha*. Marriage is prohibited with 'step-mother, mother's sister, sister, sister's daughter, mother's brother's daughter, father's sister's daughter, wife's elder sister. After his wife's death a man may marry her younger sister'.[1] At present

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1 Risley, H. H.—Tribes and Castes of Bengal, Vol. I, p. 170, Calcutta, 1891.

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cross-cousin marriage is fairly common and the divorcee or the widow is free to marry her former husband's brother. Polygamy is present but polyandry absent. Marriage usually takes place in the male between 20 to 40 years of age and in the girls between 15 to 20. Child marriage is unknown.

The different forms of marriage are :—

(1) Marriage at the bridegroom's place.
(2) Marriage at the bride's place.
(3) *Baḍa Bibaha* or the marriage of the rich.
(4) *Ghar-Jamai* marriage.
(5) Marriage by mutual consent.
(6) Widow remarriage and marriage of divorced women.

Of these the first and the fifth are usually prevalent, the third only occurs with the rich and the second and the fourth are looked upon with contempt.

The Proposal.

In the usual forms of marriage the guardian of the bridegroom visits the house of the intended bride taking with him some presents, e.g. beer, betel-leaf, betel-nut, sweets, etc., and the proposal is at first made by him with much reserve. The consent of the bridegroom is also taken in an indirect manner. Both while going as well as coming much attention is paid to the omens. If they meet persons carrying milk, fruits, fowl, or water on the right side, then these are considered to be good signs, whereas the presence of kites or vultures or the croaking of a crow on the left hand side, are all regarded as bad omens. If a corpse is met on the road, then it is considered to be a very bad sign and all negotiations stop at once.[1] No proposal of marriage is made between the full-moon day of the month of *Āshaḍ* to the full-moon day of the month of *Aswin*.

The Arrangement.

Similar visits are made two or three times. In the third time a woman accompanies the party. This time the details, e.g. the bride-price (usually 60 tolas of silver ornaments and a hundred rupees in cash), the particular form of marriage that is going to take place and the date of marriage (the favourite time being after the harvest) are all settled. As the appointed date comes near, the bridegroom's party asks the bride's party whether they will prepare beer for the marriage or not. No bride-price is paid nowadays among the advanced section.

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[1] Lewin, Capt. T. H.—Wild Races of South-Eastern India, p. 176, London, 1870.

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The Ceremony.

On the day previous to the marriage, come the musicians, from the musical note of which the aged determine the future of the couple. Besides this the women of the bridegroom's house throw two packets of betel-leaves and betel-nuts into the stream and observe whether they run together or stray away from one another. The former is regarded as a good sign and the latter as a bad one. After this one woman brings a pitcher full of water with which the pair are bathed prior to the marriage. If the marriage takes place at the bride's residence, then this part of the ceremony is performed there.

The guardians and the relatives of the bridegroom go to the bride's house, accompanied by a party of musicians and an unmarried girl of their own clan and taking presents, clothes, and jewelleries. The bride's father receives the party and the girl is carried inside. The bride is then decorated with these ornaments and dresses.

Next morning, after some auspicious ceremonies, the bride's parents part with their daughter. But as the pair go away, the ladder is blocked by seven rows of thread which is torn asunder by the bride's mother. This indicates that all her previous connections are now broken. When the pair leave the house the parents of the bride also follow them. As they arrive at the groom's residence they are received with proper ceremonies.

At night the couple are well dressed and are taken to the marriage pulpit, where the bride sits on the left side of the groom. Then a female and a male relative sit behind them and ask permission that the pair may be tied together. The answer is always given in the affirmative and they are then tied with a piece of white cloth. After this they touch each other's mouth with a mixture containing rice, boiled egg, plantain, etc. And in doing so the bride puts her right arm round the neck of the groom and the groom his left arm round the neck of the bride. The male and the female relatives assist them in this act. Then the aged bless the pair and pour water on their heads. After this as soon as the cloth is loosened both the bride and the bridegroom rise up suddenly. And in doing so if the bride rises first then it is considered that she is sure to win her husband's love. They then retire and pass the night separately.

Early the next morning both the bride and the bridegroom accompany the *ojha* to the bank of the river. There they wash their heads with a special mixture prepared for the occasion and return home before others rise from their beds.

After they have partaken of a meal, the pair receives blessings and presents from the superiors.

On the second or the third day after marriage the pair return to the bride's house with some beer, cakes, etc., and thus break the so-called matrimonial pollution. This is very

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important, for if they do not perform this they will not be allowed to step on others' platforms. They have also to visit the bride's house on the last day of the month of *Chaitra*. During the first year after marriage the pair never separate from one another.

In the second form of marriage all the ceremonies take place in the bride's house instead of being held in the bridegroom's house. Besides this there is no fundamental difference. In this case no breaking of marriage pollution is necessary. This suggests a metrical type of social organization. Unfortunately there are no data in the existing literature giving information on this point. Enquiry into this matter is of importance for if there are traces of matriarchy the Chākmā society would show a blending of more than one culture. Over perhaps a matriarchal substratum there may have been superimposed an intrusive patriarchal social form: and if an opinion can be hazarded the latter would appear to be the Chākmā type and the former that of earlier inhabitants, having an extensive distribution in the hills of North-Eastern Frontier. In the absence of more detailed information however it is unsafe to be positive but the view advanced here seems to be an extremely plausible one when we take into consideration the culture of this entire group.

The third form or the *Baḍa Bibaha* also resembles the first with the difference that in this case three houses are constructed, in one of which rests the bridegroom's party and in the other the bride's party. In the third house the pair hear the religious texts (*Sigalmogultara*) from the *Thakur*. The hearing of this text was formerly required even in ordinary marriage, but that is now given up. In this case also the pair have to break the ceremonial pollution.[1]

The fourth form of marriage resembles the second in most respects. Only the poor practise it.

In the marriage by mutual consent the pair usually run away from their houses. The girl's father, when he discovers this, reports it to the village headman and usually the parents of the youth and of the maiden come to a compromise—the latter being usually satisfied with some money and presents.[2] If the girl is carried away without her consent then the bridegroom has to pay a fine of about Rs. 60. But if the parents do not agree to their union, they then run away four times, after which there is no hindrance to their union and the bridegroom has not to pay the bride-price. In this case only the *Chungulang* ceremony is performed.

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1 Ghose, S. C.—Chākmā jāti, p. 226; 1316, B.S.

2 Lewin, Capt. T. H.—Wild Races of South-Eastern India, p. 179, London, 1870.

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The marriage of widows or of divorced women is not associated with much festivity, only a few villagers are invited to the feast.

The Position of Women.

The position of women is certainly not low. There is much liberty for unmarried girls who mix freely with the youths. They are not restricted from going to the village markets and can freely join in the *Mahamuni* and such other festivals. Although their liberty after marriage is more limited yet it is not absolutely checked, for they are the friends of men in all their activities.

Customs connected with Death.

After death the corpse is bathed and dressed with a piece of new cloth and is then placed on a bamboo bier. The villagers and the relatives of the deceased spend the whole night with the beating of a drum (*Dhul*). Then on some suitable day, specially in the afternoon, the corpse is carried to the burning ghat. It is not taken out on Wednesday and in some cases on Friday. Before the corpse is taken out one end of seven strings of thread is tied to the little toe of the corpse and the other end to the little toe of a fowl. The relatives of the dead catch hold of the fowl. Then an old man of the village cuts the thread asunder indicating that the link between the living and the dead is broken.

In the case of the rich persons the bier is placed on a chariot and it is pulled from two opposite directions[1]—one side representing Heaven and the other, Hell. But it is almost always so arranged that those towards Heaven win.

Burning is the usual mode of disposal. If the dead person is a male, then the body is placed on five layers of wood, with the head directed towards the east, but in the case of a woman it is placed on seven layers of wood with the head directed towards the west (cf. the Maghs also use more wood for the females). The eldest son, failing whom the nearest relative, walks round the pyre seven times and finally sets fire to the mouth of the corpse. After this the persons present kindle the fire from various directions. Generally with the corpse is burnt a bamboo pole with the idea that it might be of some help to him in the after-world. When the burning is complete the mourners take their bath and return home.

Children whose teeth have not erupted are buried—but they can also be burnt after touching cowrie to their mouth. Persons who have died of Smallpox, Cholera, etc., are first buried, then they are unearthed some two or three months later, when they are properly burnt. If a woman dies in pregnancy,

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1 Lewin, Capt. T. H.—Wild Races of South-Eastern India, p. 185, London, 1870.

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the uterus is slit open by the husband and the fœtus is taken out. Then the mother is burnt and the fœtus buried.

When a person dies under the supposed influence of a spirit, then the body is divided below the chest when half burnt, for otherwise they think that he would become alive and cause great mischief.

Floating of the Bones.

Next morning some half-burnt bones of the dead are collected, the rest being thrown into water. They are placed inside an earthen vessel and its mouth closed. One member descends into water and ties a piece of string to his little finger. The other end of the string is pulled by a senior member of the same clan. When the vessel sinks, he immerses himself in the water and pushes it. The priests are fed on this occasion and presents are offered to them.

The Srādha.

This is performed either on the seventh day after death or on the seventh day after cremation, when various gifts are offered to please the spirits of the dead.

The Offering of Pinda.

The offering of Pinda is restricted only to the members of the same *gosthi*. In the cremation ground two small spaces are enclosed by bamboo fencing, for the spirits of the deceased male and female members of the family. On the previous morning the spirits are invited, when some of the members present faint. The person who has fainted is addressed in the names of various ancestors, in the course of which he regains consciousness. The descendants of that ancestor then become very eager to satisfy his desires.

Next morning the priest reads various texts, and the members of the family place various offerings which are dedicated to the spirits by the priests.

If an insect chances to fall on the offering then the ancestor is thought to have been born as an insect and it is considered that the insect would die and its soul would be emancipated as soon as the *Pinda* is offered to the spirit. As on the previous morning, some person may even faint at that time. If so, then he is treated with considerable respect as being possessed by one of their ancestors.

Religion and Magic.

The Chākmā religion is a heterogeneous blend of the Brahmanic and the Buddhistic elements grafted on an

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Animistic foundation. They have an extraordinary dread of evil spirits, which should never be displeased, otherwise evils are sure to follow. Magical superstitions are found in large numbers. The *ojha* or the medicine man is the most important personality in dealing with all these elements, while the *Raḍi* and the *Thakurs* deal mainly with the Buddhistic rites. Besides this a large number of gods and goddesses appear as their deities. Some preside over the *jhum*, some over the forests, others over various diseases, and so on. They are all worshipped so as to appease their wrath. The Chākmās also worship *Siva*, *Durga*, *Kāli*, *Laksmi*, *Saraswati* and other Brahmanic deities. The Vaishnavic influence has penetrated quite recently and it is not uncommon to find some individuals wearing a necklace of tulsi beads (*Ocymum sanctum*) round the neck.

Of the various religious practices the *Chungalang* forms one of the main elements, specially in the marriage ceremony. For without it the marriage becomes imperfect. It consists of a number of divinations, as in the falling of leaves, in the configuration of the parts of animals, etc. This practice is possibly borrowed from the Maghs. For they also worship their household deity *Chummungh* during the marriage and the birth ceremonies and the building of a new house.

Of the Buddhistic elements we find the *Bishu* ceremony which takes place on the last two days of the month of *Chaitra*, when everybody dresses well. Each takes a fan in hand and passes through the streets in a charming procession. Afterwards they place the offerings and a lighted candle at the feet of Lord Buddha. On the next day the ceremonies of erecting *Thamitong* (i.e. Rice-hill—possibly of Burmese origin) and the *Tanganotsarga* (hoisting of the standard) are performed. Besides this, the full-moon days of the months of *Ashaḍ*, *Sraban*, *Bhadra*, *Aswin*, and *Magh* are held sacred, when feasts are given to the *Raḍis;* they listen to the Sastras and offer gifts to various persons. The *Chakrabuha* is another Buddhistic festival.

Of the Brahmanic elements we find the worship of *Siva*, *Laksmi*, *Kalaia* (a variant of *Kāli Puja*), *Navagraha Puja* (the worship of nine planets), and *Nabanna* festival (i.e. the ceremony of new rice—usually held in the month of *Kartik* when the crop is already ripe. On this occasion *Ma Laksmi* is worshipped and goats and pigs are sacrificed).

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The Social and Religious Institutions of the Kharias.

By B. K. Chatterjee.

(*Communicated by Dr. B. S. Guha.*)

The Mayurbhunj State in Orissa is inhabited by a number of primitive tribes whose appearance, manners, customs, and mode of living are interesting subjects for investigation. One of the most primitive and backward of these tribes is perhaps the Kharias.

In their simplest mode of life they represent one of the earliest stages of culture. They are still in the fruit-gathering stage. They do not practise agriculture. Their household utensils consist of a few earthenware pots. The men wear a loin cloth which is hand-spun and loom-woven by the people of that locality, while the women use a short cloth. They live under very low huts which are made up of short bamboo poles or *Sal* wood about 4-5 ft. in length and are covered with leaves; as the height of the huts is very low, they have to crawl at the time of entering them.

Marriage.

I give below a detailed description of the marriage customs and ceremonies of the Kharias in the Mayurbhunj State, which I had an opportunity of investigating during a short visit paid in 1928. The marriage customs and ceremonies of these people are much simpler than those of other primitive neighbours.

There is no prohibition of marriage based on social status. A Kharia boy may marry a girl of higher status and *vice versa*. There is also no prohibition based on geographical barrier and a Kharia may marry an inhabitant of a village twenty or thirty miles distant from his own. This is often done on account of their scattered manner of living. The marriage of a Kharia boy with his mother's sister's daughter or his mother's brother's daughter is allowed. But in spite of my best efforts it could not be ascertained whether the marriage of a Kharia boy with his father's sister's daughter or father's brother's daughter is allowed in their society, as the system is not very prevalent. The marriage settlement is arranged by the father or by any other guardian of the boy. With the help of his village friends, he searches for a bride, selects her and fixes up all the preliminaries with the girl's guardians. Love-marriages are very rare. In such a case, the boy with the consent of the girl takes her away with him and marries her afterwards. When a

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marriage is fixed, the bridegroom's party pay the bride's father the price of the bride in the form of money. Before the bridegroom sets out for the bride's house to marry, the groom's father worships the Fire-Deity by sacrificing a goat before it. Unless this is done the groom's party would not take any food at the bridegroom's house.

Marriage Ceremony.

During the actual marriage ceremony the bride sits on the left of the bridegroom. Two rings of *Kusha Grass* are placed on the middle fingers of each of them. Their palms are then joined and placed over an earthen jar. Mango leaves are kept in another jar which also contains water. The water from that jar is poured over the joined hands of the bridegroom and the bride. The above is conducted by the priest. Then a cloth is spread before them and both are made to crawl under it. They then sit down on the ground facing eastward and the priest makes a knot with the end of the cloths worn by the groom and the bride. Two empty dishes are placed in front of them and one places food on the other dish. The priest then unties the knot and gets his dues. Up to this point the ceremony is conducted at night: afterwards in the morning the priest again ties a knot and tells them to play '*Kada Kali*', i.e. the groom hides a jar in the mud and it is the duty of the bride to find it. Similarly, the bride hides a jar in the mud which the bridegroom finds. After *Kada Kali* is finished, the bride anoints the groom's head with oil and then the groom flies. The bride chases him and catches him with the help of others. This concludes the marriage ceremony and the bridegroom then takes the bride home.

Cases of adultery and kidnapping of a married woman are treated rather lightly. In such cases, the husband only demands the 'bride's price' and the matter is dropped when he gets it. A man may have more than one wife, but generally circumstances do not permit them to have more than one. Divorce is allowed. It is complete when the husband gets the wife's price and after divorce the wife may marry again, not in the usual form of marriage but in what is known as the *Sanga* form of marriage.

Sanga form of marriage.—In a *Sanga* form of marriage, the usual ceremonies are not gone through, but a Kharia simply takes a woman as his companion and mistress and lives with her.

Religion.

The Kharias do not worship numerous deities as in the case of their neighbours, but have only four, viz.: (1) Agnipat (Fire-deity); (2) Barapahar (Big Mountain); (3) Pachima Bir; and (4) Narsing Bir.

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Besides these, they perform *Baram Puja*, which is nothing but ghost worship.

Agnipat.—The worship of the *Agnipat* deity is celebrated at the time of a marriage ceremony. The bridegroom's father worships the deity before the groom's party sets out for the bride's village and the groom's party would not partake of any food until the worship is performed.

The groom's father, and in the case of his absence any other male guardian, worships the deity by simply sacrificing a goat.

Barapahar.—The worship of this deity is celebrated on the last day of month of *Paush* corresponding to the English month December-January. Only those persons are allowed to worship it who are acquainted with the *Mantras*. The requisites are a goat, sweets, vermillion, sun-baked rice, and incense and resin.

Pachima Bir.—The worship of this deity is also celebrated on the last day of the month of *Paush* and is conducted mainly with vermillion which is taken on the left palm and, putting the hands behind the back, four dots are made with the vermilion in a straight line on the ground.

Narsing Bir.—Narsing Bir is also worshipped on the last day of the month of *Paush*.

Baram Puja.—Baram Puja is performed on the day of full moon in the month of *Magh* corresponding to the English month January-February.

This is performed by the hereditary priest on behalf of the family. The following articles are required for this Puja:—

Goat, fowl, vermilion, *Methi*, and flowers.

Magico-Religious Belief.

The Kharias believe that the whole of the Universe is full of spirits and whenever they are attacked with any disease they attribute it to some of these; so sincerely do they believe this that no arguments can win them from their firm conviction; on the other hand, they will try their best to convince and convert others to their own belief and they will argue with as much conviction as if they can actually see and show the spirit at that moment.

In the course of my enquiries, when I was putting some questions about these spirits, an old man exclaimed that they could show me if I would accompany them to a certain place. To this I agreed, but after a few steps they refused in a body to accompany me at that time because it was then mid-day and the spirits living on the top of the banian tree would be angry and would do great harm to them in the evening and much to my astonishment and disappointment they left the place. According to these people, there are two kinds of spirits, male and female, with different names such as Kudar, Baram, and Bisalakhi and Kudar-Baubisalakhi.

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Spirits propitiated.—Whenever any person is attacked with any disease, they send for the village medicine man, who at once comes to the house of that person and places a few drops of oil on a *Sal* leaf. If that oil sticks on all sides they will take it for granted that some malignant spirit must have caused the illness and so that spirit must be appeased.

They have some fixed day and fixed time and, last but not least, a fixed place for propitiating these spirits. They have also different kinds of *mantras* and different procedures for different spirits.

This ceremony is performed in the early morning of Sunday, Monday or Friday at the junction of four roads. The medicine man draws a figure, representing the spirit, and offers sun-baked rice besmeared with the blood of a black fowl, or when a black fowl cannot be secured the medicine man substitutes his own blood, and says 'Oh spirit! we have not been able to offer you what you want, so please be satisfied with what we have offered and depart'.

Female spirits called *Bisalakhi* are supposed always to wear white cloth and live at the top of a tree, and if any person by chance goes under it on Saturday or Sunday at noon they are supposed to do him harm. These spirits eat fish after stealing it from their huts and annoy children. When any one is attacked by these ghosts that person must be fed with sweetmeats.

Funeral.

Generally, they bury their dead bodies but if a person dies of cholera or smallpox they throw the dead body away in a forest. If, however, anybody dies of snake-bite, they bury the dead body. When a woman dies during the period of gestation or at the time of delivery they cut open the womb of the woman, take out the child and then bury the mother and the child side by side. After death the whole family remains impure for ten days. The father, mother, uncle (both paternal and maternal), daughter, unmarried sister and son-in-law of the deceased observe this. On the tenth day the members of the deceased's family, consisting of the father, mother, and their unmarried children shave their heads and then go to a pond or river to bathe. After bathing, they all come before an effigy made of clay; on the left side of the effigy is placed a vessel full of water, near it there are some leaves of *Tulsi* plant. They all drink a little water from this vessel and then return to their huts. Afterwards, they entertain the guests at a feast and the rites concerned with the dead are regarded as over.

Occupation.

Male members work in the field as day-labourers or cut wood from the forest and burn it for charcoal, which they bring

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to their huts and use for the purpose of roasting their food. Women collect roots and fruits from the forest and do other household work, such as cooking. They look after the children, and the boys and girls help their fathers in the field and graze the cows.

Inheritance.

Generally, adoption is not allowed but they can bring a boy into their house who will be brought up as their own son. The boy will retain the clan-name (*gotra*) of his putative father and will succeed to some of the property of his so-called adoptive father. No ceremony is performed at the time of adopting that boy.

Addendum.

I am indebted to Dr. S. L. Hora of the Zoological Survey of India for having directed my attention to a note on the 'Marriage Ceremonies of the Kharias' by Rev. L. Cardon of Ranchi (*Journ. As. Soc. Bengal*, LXXII, pt. iii, pp. 29, 30, 1903) in which the following facts are of interest:—

(1) The marriage takes place at the home of the bridegroom and not at the bride's house.

(2) The imposition of a fine on the bride in the event of her touching or being seen at the time of combing her hairs or dressing by the bridegroom's elder brothers or cousins.

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Wild Men in Assam.

By J. H. Hutton.

The traditions of wild men current in the Naga Hills at any rate may be roughly classified under five heads—(1) little people —pixies, so to speak, generally unseen but often audible and occasionally caught; (2) ogres of cannibalistic tendencies; (3) lycanthropists, men who turn into lions, leopards or tigers as the case may be; (4) Amazons, who are wild men in genus if not in gender, and (5) monstrous races.

To take them in order, the little people seem to a certain extent to have the attributes of earth spirits, if they are not actually confused with them. Men frequently hear them calling in the jungles, but they do not see them. The Sema Naga word for an earth spirit (as distinct from a sky spirit) is *teghāmi* which would appear by derivation to be simply "jungle men." The Angami Naga word is *terhoma*, and though it appears to have no connection with the word for "jungle" in ordinary use, there is an obsolete word *terha* which has that meaning. There is a very concrete conception of these earth spirits, and it was once reported to the writer that the trans-frontier village of Tobu had caught one in a snare, killed it, and thrown away the body. It is possible that it was a slow loris[1] which is a very rare animal occasionally found in the hills and regarded with grave superstition. However, all tribes have traditions of jungle men who have been caught and kept, eventually becoming the ancestor of existing clans such as the Lezechunoma sept in the Angami village of Kohima, whose ancestor was found in a hollow tree and belonged to "the wood-cutting generation," or the Lhota clans of Eni, Thangwe and others whose ancestors were caught in the jungle, or the descendants of the woman whom ancestors of the Phoms found in a cave. So too the Konyaks speak of the *Maiknak Nok*, a monkey-like race which inhabited the hills before their coming.[2] It seems to the writer not unlikely that these stories of little people, living in the jungle and sometimes caught and tamed, have a definite reference to a branch of the Negrito race which apparently actually did at one time occupy the areas now inhabited by the Naga tribes or at least areas which Naga tribes previously inhabited, and which has left a tangible physical impression on more than one tribe

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[1] *Nycticebus tardigradus* (Linn.).
[2] Peal, *Fading Histories*, *J.A.S.B.*, I, 1894.

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in the hills.[1] Hartland, it is true, condemns the view that tales of little people are based on previous contact with a dwarfish race.[2] He does so on the ground of the universality of the distribution of such stories, but there is a good deal to suggest that pre-historic contact with dwarfish races must have been hardly less widespread than the tales which are imputed to that contact. Negrillos in Africa, Negritos in Asia and Oceania, Eskimos in America, Lapps in Europe, not to mention the Bushmen of Africa whose art would seem to connect their past with the west European Peninsular, give a pretty wide range for dwarfish races. At any rate, if all stories of pixies are not founded on actual experience, that is no safe ground for saying that none are, and Assam looks as if she might provide a case in point.

To turn to Ogres. These are very near to the familiar *rakshasa* of Hindustan. *Rotsoma* the Angami call them and they carry off children and fatten them for food, and the Kachha Naga tell of two brothers who overheard their cannibal captors discussing the fate in store for them, and who escaped after great adventures. How far these ogres are confused with a cannibalistic variety of sky spirits I am not sure, but the Ao, Chang and other Nagas have stories of spirits living in the heavens and keeping mithun [3] which are really the souls of men so that when they kill a mithun a man dies. The daughters of these spirits have been known to marry mortals and live on human flesh, going to visit their parents in the sky to get mithun meat which their husbands discover in the form of human limbs hidden under leaves and so forth. It may be mentioned that the Maori, of New Zealand have some exceedingly similar traditions, and in the Polynesian after world of Po the souls of the dead are "eaten" by the gods.[4] Here perhaps we have the obverse of the tradition of the little people. It has been suggested that the latter represent the survival in tradition of a conquered race, driven out or exterminated for the most part but surviving in individuals captured and enslaved by the invader. The Ogre is perhaps the opposite, a characterization of a conquering race by a conquered. One has only to think of the innumerable cases in which intruding white men have been accused by native races of eating human babes, quite inaccurately, at any rate within the writer's experience. After all the ogre is not too outrageous a caricature of *Homo sapiens*. Up to the date of the British occupation Sylhet was known throughout Bengal as a prolific source of kidnapped boys for castration and employment as eunuchs. Even after the British occupation of

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[1] *V. Man in India*, VII, iv, Dec. 1927, *a Negrito Substratum in the Population of Assam.*

[2] *Science of Fairy-Tales*, Ch. XII.

[3] *Bos frontalis.*

[4] Moss, *Life after Death in Oceania*, p. 80.

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Sylhet itself, persons were abducted for sacrifice at Jaintiapur, and the threat of sale to the Jaintiapuris is said to be still used by Sylheti mothers to frighten their children into good behaviour.

It is, however, perhaps not necessary to go far afield for a source of belief in mere cannibalism. Two Muslim travellers of the 10th Century even report that human flesh was sold in the markets in China.[1] In the Naga Hills tradition always puts the village of the cannibals a little further east than the furthest village with which the relaters trade, it is not impossible that cannibalism was actually practised in Assam. Both head-hunting and human sacrifice arise from a theory of the soul as the source of all life, existing as a quasi-material entity within the body which it pervades, and transferable to other bodies indirectly through the soil and the crops, the circuit of life being continued by the consumption of the crop by human beings. This theory is stated in a very definite form by the Karens of Burma,[2] who claim the Angami Nagas as their kindred[3] and are claimed as kin by the Angamis who say they left a branch of their race in the plains of Burma and speak of this branch as Kerenoma. Now throughout the Indian Archipelago, head-hunting, human sacrifice and cannibalism appear as manifestations of the same principle, some tribes practising one and some another, so that a head-hunting culture in one island is replaced in another by a culture otherwise similar but in which head-hunting is absent and human sacrifice, or cannibalism present. Obviously the speediest way of transferring the life giving soul-matter from one body to another is for the second to consume the first and so obviate the tedious necessity of awaiting the harvest to obtain the elixir which would have to be shared in that case with all the other consumers of the crops, if not with all the direct and indirect products of the soil. Accordingly we find traces of an attempt to effect the absorbtion of soul matter by means of cannibalism, actual or ceremonial. Hose and McDougall report a case in which a girl was killed and a bit of her flesh fed to her sick brother in order to effect his recovery.[4] Clearly a case in point. Since therefore a theory which may give rise to cannibalism is held in Assam, the practice also may have existed there likewise. Another belief, which may give rise to cannibalism, is that in the transfer of the qualities of that which is eaten to the eater, a practice held by some to be responsible for cannibalism among some tribes of South America. This belief is also well

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[1] Translated by Renaudot, *v. Pinkerton's Voyages*, Asia I, p. 200.
[2] Marshall, *The Karen People of Burma*, p. 222.
[3] Smeaton, *The Loyal Karens*, p. 68.
[4] Hose and McDougall, *Pagan Tribes of Borneo.*

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known in Assam, where the Naga refuses to eat the white-headed fork-tail for fear he should become prematurely bald and denies goat flesh to his women-folk for fear it should make them libidinous. However that may be, we find Glanius relating the adventures of a XVIIth century traveller to Assam, who accuses the hill tribes of eating the bodies of their dead relatives,[1] and this is still reported of the Lobas, a Himalayan tribe reputed to inhabit the mountains behind the Abors.[2] In the Angami sacrifice of the *Lisu* ceremony, a bovine victim is invested with a cloth and a spear, the attributes of humanity, surely, and torn to pieces and devoured.[3] The Lushei warrior used to lick from his spear-blade the blood of his first victim,[4] a custom, by the way, also practised in Melanesia.[5] Finally we have the case of a British Officer, killed at Khonoma in 1879, whose flesh was undoubtedly tasted by some of the young warriors of that village.

As for tiger-men, it is perhaps not fair to class the genuine lycanthropist with wild men, though it may be noted that Semas derive their name for them from a root meaning to wander in the jungle. There is, however, a widespread belief in the Naga Hills in a mysterious village further east where the inhabitants are lycanthropists, tiger-men according to Nagas, lion-men according to Kukis, and as this village is nearly always associated in tradition with cannibals, and with Amazons, the belief in it cannot rightly be ignored when dealing with wild men in this area, particularly as this association goes back to Herodotus who adds head-hunters to make a fourth.[6] Here again it is possible to ascribe the belief to the result of contact between races. Tribes containing tiger clans are found among the Kacharis and Chang Nagas for instance, survivals perhaps of some extinct totemistic belief which might easily be misinterpreted by strangers. Lycanthropy, too, seems to be associated with particular tribes, as distinct from their neighbours. The Sema practise it, their Angami neighbours do not, though they share in the belief in it. So too the Garo are frequently lycanthropists, but the Khasi, though acquainted with the belief, deny that it is a Khasi practice. The belief in tiger-men may therefore be merely the result of a contact by untigerish tribes with tiger clans or with actual lycanthropists. For this lycanthropic habit appears to be something more than mere vain imaginings. It is probably based on a pathological

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[1] *Naufrage d'un vaisseau Hollandois*, p. 73.
[2] Duff-Sutherland-Dunbar, *Abors & Galongs*, p. 5, M.A.S.B., vol. V.
[3] *Vide Carved Monoliths at Dimapur, etc.*, J.R.A.I., vol. LII, p. 69.
[4] Lewin, *Wild races of South East India*, p. 269.
[5] Codrington, *The Melanesians*, p. 305. *cf.* also Herodotus IV. 64 and Leitner, *Dardistān, 1886-1893*, pp. 14, 53, 61.
[6] *Melpomene*, 102 sqq.

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condition, and in races akin to the Malay is no doubt propagated by the disease of suggestibility to which that race is subject. Skeat records the case of a man caught naked in a tiger trap and describes the behaviour of small boys hypnotized into believing themselves to be civet cats.[1] One hesitates to ascribe too much reality to what seems a fantastic belief, but many lycanthropic occurrences in the Naga Hills are too circumstantial to be dismissed as mere delusion and one is almost tempted to impute to certain individuals a telepathic sympathy with leopards in the jungle, for in Assam it is leopards as a rule, which are involved in these practices, and the lycanthropist does not change his shape but merely establishes a sympathy with a leopard in the jungle so intimate that the lycanthropist knows when and where the leopard kills and if the leopard be killed the lycanthropist dies—when he hears of the killing. That some sort of fellowship with wild animals may not be impossible is perhaps suggested by the stories so frequently appearing of children brought up by wolves[2]. Such cases involving tigers are more than doubtful, but the *Englishman* reported, on November 18th, 1921, a case of a child suckled by a lioness in South Africa. There are no wolves in Assam, so lycanthropy there is associated with leopards, and probably the best authenticated story of a child suckled by a wild animal of them all is the case of a boy suckled by a leopard in the North Cachar Hills reported by the naturalist Stuart Baker in an article on "*The power of scent in wild animals*" in the Bombay Natural History Society's Journal[3] in July 1920.

Wild women, as already mentioned, are associated with cannibals, head-hunters, and lycanthropists by Herodotus, but the Naga,[4] though placing their village to the east of the Naga Hills, and next to those of the cannibals and of the tiger-men, will allow the occupants to have no relations with them, and ascribes to his Amazons methods of reproducing their kind which are not a little fanciful.[5] Some say that they are impregnated by the suckling of hornets at their breasts; we must, no doubt, reject such fantasies, but we must again beware of treating the whole as pure romance. Tales of

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[1] *Malay Magic*, pp. 160 sq, 436, 455. The curious may refer to the article on lycanthropy in the latest (1929) edition of the *Encyclopædia Britannica*.

[2] e.g. the Midnapur case, reported in the *Statesman* of November 13th and 17th, 1926, and the Allahabad case reported in the *Englishman* of April 7th and 8th, 1927.

[3] Vol XXVII, p. 118.

[4] Vide *The Angami Nagas*, p. 263, and *Folk Lore*, XXXIV, 234.

[5] So the Chinese tell of a country inhabited exclusively by women who conceive by sleeping where the south wind blows on them (Fielde, *A Corner of Cathay*, p. 136.)

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Amazons elsewhere have probably grown out of true reports of such institutions as Chandragupta's [1] or, better authenticated, Ranjit Singh's, [2] or the king of Dahomey's female *Corps de Garde*, but in the Naga Hills the martial aspect of the Amazon legend is absent, and the origin is probably to be found in the actual existence of a village or villages devoid of males, a phenomenon in itself quite contrary enough to ordinary experience to give rise to any sort of fable when repeated to those who have not been in contact with the cold and probably commonplace fact. The Gazetteer of Upper Burma and the Shan States [3] actually reports two such villages as existing in the Upper Chindwin Valley, and therefore not too far from the Naga Hills. They are very small villages, but there may have been others,[4] and anyhow man is born to exaggeration as the sparks fly upward, so that even if a village had very few men in it, it would lose even those that it had in the noising abroad of its fame.

When we come to monstrous races it is always not so easy to find a foundation in actual fact. Some varieties are easy enough, but anatomical anomalies like the single-footed people who lie on their back and shade themselves from the sun with their sole are a little difficult to supply with a pedigree, and even more so, if possible, are the ingenious Chinese who grow with a nicely chamfered hole in the middles of their chests for the carrying of them skewered on the handy bamboo.[5] Nor is it easy to see a tradition of the pineal eye in the cyclopean ogre of the Kachins, who possesses one orb in the centre of his forehead.[6] Stories of this sort are very ancient. Pliny, Strabo, and Pomponius Mela [7] seem to have got their versions from Megasthenes. Mandeville [8] seems to have borrowed from them in turn. Peter Heylin [9] mentions them

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[1] Strabo, XV, p. 709, 710.

[2] Rothery, *The Amazons*, p. 74.

[3] Pt. II, Vol. ii, p. 201.

[4] Palladius, Bishop of Hellenopolis, reports in his *De Gentibus Indiae* a village of Brahmans where the men lived on one side of the Ganges and the women on the other, and the men crossed over to visit the women for 40 days in the year only, and no man returned after his wife had born a child (quoted by Yule on *Marco Polo*, III, xxxi, and by Rothery, *op. cit.*) Hiuen Tsang gives a similar account of the "Kingdom of Western Women" in an island south of Fo-lin (*i.e.*, Constantinople ?), where, as in the Angami version, they rear no male children (Beal, *Buddhist Records of the Western World*, II, 279.)

[5] Fielde, *loc. cit.*

[6] Hanson, *The Kachins*, p. 157. Strabo describes them too—ἐν μέσῳ δὲ τῷ μετώπῳ τὸν ὀφθαλμὸν (XV, 711), and of course Mandeville (XXII). Both Strabo (II. 69) and the Kachins agree in making their toes turn backwards.

[7] *De Chorographia*, III, 56.

[8] Ch. XXII.

[9] *Cosmographie*, III, 'Of India.'

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all, and Purchas[1] writing of "Many doubtful and fabulous reports of the Indians" also quotes Pliny as to "Pigmeis" and "such as live only by sent" (*i.e.*, scent) etc, but dismisses them with a curt statement that he does not wish for the "admiration of fools." A laudable sentiment, but it is not uninteresting to track some of these marvels to their source. Let us start with Strabo. He mentions the Enotocoeti,[2] whose ears were so long that they hung down to the ankles and so large that they slept on one and used the other as a coverlet "and wild men (*ἀγρίοι ἀνθρώποι*) and other monsters" and goes on to tell us of specimens of a gentle mouthless race who were brought to the court of Chandra-Gupta—*ἀστόμους δε τίνας ἀχθῆναι ἀνθρώπους ἡμέρους· οἰκεῖν δε περὶ τας πηγὰς του Γάγγου·* and that they dwell about the sources of the Ganges. He is drawing on Megasthenes, but Megasthenes cannot have seen them for himself and was probably repeating what he had heard in India. If we turn to Alberuni,[3] we find him mentioning not, it is true, the Enotocoeti,[4] but people with ears like sieves, not at all a bad description of the Lhota or Sema Nagas who bore two holes in the concha of the ear as well as others in the helix and the lobe, but one which might give a totally wrong impression in the matter of size. These he associates with the single-footed monstrosities so fascinating to Pliny and Co. and also with Pragjyotishya, Lohitya, Kasi and Mekala. Clearly Assam is indicated. Mekala is probably the 'Miklai' which has been used for both Manipur and for the Lhota Nagas. Pliny clinches the matter for he places some of his wild men in a certain valley of the Himalayas called "Abarimon."[5] Obviously he, or his source Megasthenes, has heard of the *Ābări manuh* of the Assamese and mistaken a people for a place, and *abări manuh* means literally "wild men" as opposed to tame ones—*bori*. It is, or was, used by the Assamese not only for the Abors but for any hillmen of the remoter ranges, and older books on Assam often allude to Nagas of the inner ranges as Abors. The interesting thing is to hear what these wild men themselves have to say about Strabo's and Pliny's monsters. We have already mentioned the Kachins; the Ao and the Angami tell us of the people whose ears are so large

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[1] *His Pilgrimage*, V. i, § 3.

[2] XV, 711 and II, 69. Mandeville, for a wonder, shortens the ears to the knee.

[3] Vol. I, ch. xxix, p. 300, Trubner, 1914.

[4] Though there is Sanskrit authority also for these as *Karnaprāvaramās* and McCrindle quotes *Mahabharata* II, 1170, 1875 in this connection (*Ancient India as described by Megasthenes*, note on Fragt. XXIX.)

[5] He seems to be referring to the Lobas mentioned above—*Super alios autem anthropophagos Scythas, in quadam convalle magna Imaī montis, regio est, quae vocatur Abarimon, in qua silvestres vivunt homines, etc.*, Nat. Hist. VII, ii.

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that they sleep on one and cover themselves with the other;[1] the Sema of a tribe whose noses are upside down (like those of the Kachin *Chyăwoi* already referred to), so that when they walk out in the rain they must cover their nostrils with a plantain leaf or the blade of a dao, a tale also to be had, by the way, from the Bila-an of the Philippines; the Chang of a race of dwarfs who have no mouths and live by sniffing meat held to the nose,[2] as a natural corollary of which they had no vent in the anus, till a lewd fellow of a tribe of normal anatomy got among them and persuaded them to let him treat their children to make them as he was and thus destroyed them all with a hot iron, and escaped while their confiding parents awaited the promised recovery and transformation.

In these stories again we can trace the acorn of reality from which this oak of romance has grown. Large ears were formerly regarded by the people of south eastern Asia as a sign of beauty[3], and hence no doubt the practice of enlarging them with plugs and weighting them with numbers of rings so that they were sometimes long enough to reach to the breasts, a practice which extended from Formosa to the Garo Hills, where it is still followed[4], as also by Kukis, Tangkhuls and others. Hence no doubt an unkind jape at people whose ears were so big,[5] akin to that in the 'Thousand and One Nights' at the negro whose lips were so thick that the upper lip brushed the stars while the lower caused his feet to stumble. As for the inverted nose, we have seen Garos in Mymensingh so prognathous and so platyrrhine that their nostrils certainly opened forwards instead of downwards, if they did not actually slope upwards. It only needs a little twist to this to arrive at unfortunates who must cover them when they go out in the rain, and whose noses may therefore be said to be upside down. It is from this notion of inverted noses, perhaps, that we get first the noseless ones of Megasthenes[6] and then the mouthless ones. If a face is drawn

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[1] McCrindle (*loc. cit.*) mentions the account of a sepoy in the British service who had *seen* such people.

[2] So Pliny "*ad extremos fines Indiae ab oriente circa fontem Gangis, ...gentem sine ore,.....halitu tantum viventem et odore quem naribus trahant.*" (loc. cit.)

[3] *Les Siamois ont les oreilles un peu plus grandes que les nôtres, mais naturellement et sans artifice.....et plus ils les ont grandes, plus ils les estiment: goût commun à tout l'Orient* (La Loubère, *Rayaume de Siam*, I. 101). The Palaungs still regard large ears as a sign of goodness and wisdom. Milne, *Home of an Eastern Clan*, p. 28). *V.* also my note at p. 308 of Mills' *The Ao Nagas.*

[4] Playfair, *The Garos*, p. 29.

[5] Cf. Harcourt, *Voyage to Guiana* (Hakluyt Society, 1928), pp. 109, 174.

[6] ἀμύκτηρες, ἀναπνοὰς ἔχοντες μόνον δυο ὑπὲρ τοῦ στόματος (Strabo, XV. 711), though Pliny gives them only one breathing hole—("*naribus carens uno tantum foramine spirat* (*Nat. Hist.* VI. 30). The Rabbi

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with the nose really upside down the correct position of the mouth is not too easy to determine, and the other concomitants follow naturally down to the circumstantial observation of the Chang Nagas that the meat sniffed in this seemingly unsatisfactory way lost its goodness at once and had to be thrown away as rotten already.

In conclusion then we may perhaps deduce the moral that generally speaking these stories of wild men are founded on experience, though not on the same experience, giving rise, no doubt, to generalized notions of wild men; that they bear witness to the inherent inability of mankind to observe accurately and report correctly wherever racial prejudice is involved, and that they testify to the unbounded capacity of *Homo sapiens* to inflate the unwonted into the marvellous and to believe the supremely incredible.

KOHIMA,
April, 1928.

Benjamin of Tudela, a Spanish Jew, who travelled in the XIIth century A.D., reports a tribe of men who "seem to want noses; but instead thereof, they have two holes in their faces through which they breathe" (Pilkington, *Travels in Asia*, I. 10). The learned translator remarks "it is not so very far wide of the truth; for modern travellers assure us that the Kalmuc Tartars have noses so flat that they are scarce to be distinguished but by the rising of the hostrils," so Megasthenes' noseless ones may be merely Mongolians after all.

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A Note on the 'Wild People' of the Santals.

By P. O. Bodding.

So far as I know, the Santals have no stories or recollections of having at any time had experience of beings of the kind referred to in the communications made in the Monthly Meetings of the Society on the 'Wild People' of Tibet by Mr. van Manen. They have, however, stories of fabulous beings in other parts of the world than where the Santals at present live, and also stories of anthropoid apes.

I mention the latter first. The Santals naturally know the common monkeys found in their country, the hanuman (by the Santals called *hãṛũ*) and several kinds of monkeys (by the Santals called *gãṛĩ*). They also have heard of some apes, reported tailless, living in Assam, called by them *olo*[1] or *olo baṇḍa*. Although they are fully alive to the intelligence of these beings, they have no doubt as to their being animals, only that they often show supposed human traits. They also believe, that these apes have a kind of organized society with social rules, and that apes who sin against these are outcasted from ape-society. I believe there is even now in Dumka living an old hanuman of whom the Santals have said that he had committed some social crime (in connection with ape-marriage) and had been driven away from the ape-society living on a hill some twenty miles to the west of the place.

Besides these they have a name of a being that they call *bir sindiċ*. The last word is likely Santali, the first one also. *Bir* in Santali means 'forest': it is, however, also used for a strong man, giant (in this meaning it is borrowed from Sanskrit *vira*). *Sindiċ* is not otherwise met with in Santali, so far as I know; *bir* is very frequently used as an adjective prefixed to other words, very much like with us 'forest' (often equivalent to 'wild'). I have never met a Santal who has seen a *bir sindiċ*; but I have heard Santals in the Zoo in Calcutta express an opinion that the Orang utans seen there likely were *bir sindiċ*. I have an impression that the Santals at the back of their minds have a vague kind of idea, that the *bir sindiċ* they have heard of possibly are a little more than an ape, something 'anthropoid.' They are reported to make for themselves tiny mud huts in which they live.

I have heard the following story: Some forty years ago it happened in a tea garden inside the Santal Colony in the

[1] As a curiosity it may be mentioned that the Norwegian explorer, the late Mr. C. Lumholtz, tells that he in Borneo met a tribe called *Olo*.

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Goalpara district in Assam that three *bir sindiċ* came there ; the coolies gave chase, two of them managed to escape, but the third was caught, and she was a woman, as the narrator expressed himself. She was standing with head bowed down and hands kept up before her face, as one very much ashamed ; and when the people had their attention drawn away for a moment she managed to escape, and these *bir sindiċ* have not been seen since. The narrator had heard this, not seen the 'woman.'

What struck me when I heard this was that the Santal called her a woman, although I think he was clear in his mind that it was a kind of ape. When such a story passes from one mouth to another, it will receive small additions here and there, whilst something also may be deducted, and before very long a theory may be formed with such a story as proof of its truth. H. C. Andersen's story of the feather that became five hens is in accordance with nature.

The Santals have stories about strange peoples and beings, not that they have ever seen them themselves, but they have heard of them. They tell that to the east people live who are naked, and who eat their parents when they die, saying : they carried us in their bodies when we were born, now we shall do the same for them ! These stories possibly refer to the Nagas, possibly (according to Santal explanations) to people living towards Tibet.

They further tell that in these regions (their ideas are hazy, but one would think they referred to places bordering on Tibet) the *ekaguṛiạ* and *ghọṛ mũhã̄* live. These beings have only one leg and a mouth like that of a horse. They eat human beings. It is not more than some forty years ago, that it was commonly told and believed by ignorant Santals that people who engaged Santals to take them to work on tea gardens in Assam really took them away to sell them to these *ekaguṛiạ* who paid a basketful of money for each. The *ekaguṛiạ* country is said to be very foggy.

Even Strabo had heard of similar beings nearly two thousand years ago.

The present day Santals have transferred the abode of these beings to the magic-filled east. Otherwise there are stories stating that the ancestors of the Santals have been living in the same country with them, as the tale says, here in this country, but this last remark has to be referred to the place where the story first started.

I give here one story as I have received it from a Santal, in translation ; in an Appendix a similar one is reproduced.

In olden times, it is told, before the Santals came to this country, the *ekagudiạ* (this is only a parallel form of the name) were living here. The Asurs were smelting iron, and these were smelting silver ore and were eating people. They smelted silver ore and cast rupees. People say that they were able to

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run exceedingly rapidly on their one leg. In spite of all the Santals were not afraid of them, but fought with them. To get money, it is told, they were in the habit of selling people to them. They caught a person and took him to a lair they had agreed on. Here they kept a drum. When they had caught and brought some one they tied him, bent up with his hands on his back, so he could not get loose and run away. Thereupon they beat the drum and came away. Now the *ekaguḍiạ* came with money which they put down near the drum, whereupon they carried the person away. A moment afterwards the others came back and took the money. But when the *ekaguḍiạ*, it is told, reached their place, they felled the person with a hammer blow. When this was done they boiled clarefied butter in a large pan; when it was on the boil, they put the body in and boiled it thoroughly. When ready they hung the body in the door, and every time they went out or came in they took a bite and continued in this way, until they had finished him.

After some time the people commenced to beat the drum falsely; for where could you every day find the needed bait? The *ekaguḍiạ* came with the money and looked for the man, but there was no one there. Naturally they became angry and commenced to lie in wait, and when the people came and beat the drum they pursued them and caught them. People tell, if you ran along a road or a path, they would catch you in no time; therefore when an *ekaguḍiạ* was after you, you should run to lowlying boggy land, or to where there are high ridges. If you only could jump over the ridges, you were safe. The *ekaguḍiạ* has, as you remember, only one leg; if he tumbles down he is unable to get up quickly, and you get away in the meanwhile. When this happened two or three times the *ekaguḍiạ* got tired of it and gave it up. Later on, it is told, the Santals became more plucky, and when they saw the *ekaguḍiạ* come running, they met them with bow and arrow, and when they had in this way killed three or four of them, they became afraid and ran away. Now-a-days they are not to be seen, whether they have been exterminated, or whether they live in some other country, is not known.

Like stories of a similar kind, I suppose the one here related must have some connection with fact; but what this may be it is not possible to say. There is no silver to be found in these parts, or where the ancestors of the Santals have been for centuries. No Santal would think of selling a human being to be eaten, and there would be no market! Might there possibly be a reminiscence here of the ancestors of the present people having been in connection with, or having heard of, the head-hunting peoples in parts of Assam or neighbouring countries?

How a small matter may be the origin of a long yarn the following story may show. I shall first reproduce the story as told and then make some remarks on it; it runs as follows:—

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People tell, that in olden times when the primeval forest existed the Asurs were living here. They were much stronger than the Santals, in other respects they were looking like Santals. They had no form of cultivation; they were smelting 'orestone'; from this iron was melted out, and this iron they were in the habit of eating whilst it was hot; this was what they were living on. Then when we Santal human beings came down here from the up-country (*i.e.* from the west), the Asurs said among themselves: Hallo, what kind of human beings are these coming here? Then somebody told them and said: These human beings who are coming are stronger even than you. You are able to eat only hot iron; but these people eat both kinds; they eat what is hot and they also eat what is cold; they eat rather more of what is cold. When they heard this, they said: Well, then let us also try to eat what is cold and see whether we can manage this or not. Then, to tell the truth, when they had heard this, they took cold iron and bit it; but however much they tried, they were unable to manage. Consequently they became very much afraid and said: We shall never be able to hold our own against these people. Now we Santals eat hot rice and cold rice, and the man who told them the story did not trouble to explain to them that he referred to rice, and then they naturally became frightened, and as soon as they heard the sound of the Santals coming they moved further on. People say, that the Asurs did not know how to build houses. Wherever they found a precipice or a slope they dug in and made a den and themselves lived in this.

The iron slag found in the jungle is a relic of them; here they smelted iron. When they died, people saw their bones: they look like wood and stone mixed up (this refers to a kind of limestone, by the Santals called *ạsur haḍ*, lit. Asur bone). These tremendously strong people were driven away, as told, by the help of spies; otherwise no mother's son would have been able to drive them off. This is what people tell, whether it is true or not; I have not seen them myself, the narrator added.

As is known, there is a tribe called the Asurs, now-a-days speaking a Muṇḍa language, living in Chota Nagpur, not here in the Santal Parganas. They are reported to have been here (which, however, may be incorrect); there are small tanks found here and there, called *Ạsur pukhri*, Asur tanks, reported to be dug by the Asurs, and with large implements, as four kodalis full dug out were sufficient to make the tank. In many places is found iron slag, called *mẽṛhẽt̓ iċ*, iron excrement, and also *kọlhẹ iċ*, Kolhe excrement (the Kolhe tribe have up to quite recently been smelting iron; I myself have seen them doing it), or *Ạsur iċ*, Asur excrement. Now in Santali *iċ* means rust, slag, dross, but also excrement, and this is the clue of the story.

What I have written is all meant to show, how small

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matters, observed and not understood, or used for the purpose of getting some fun out of them, may be at the bottom of strange stories in which a few dim and indistinct reminiscences may be mixed up. Once started they do not lose in interest, but become more and more vivid.

I have not touched on the superstitions and folktales current among the Santals having reference to *boṅga*, spirits, *cuṛin*, a kind of spirits with large heads, and feet reversed (as is said to be the case with many bongas), believed to be women who have died in childbirth (the *cuṛin* are reputed to suck the blood of human beings), and *bhut* which are very small and said to be children who have died before birth or before getting a name. All try to frighten people. There are many stories about these, their shape, their mode of living and their doings and powers, and how people have seen and been living with these. Some parallels to statements found in certain of the stories related in connection with Tibet might perhaps be traced in these Santal stories, but they would scarcely give much help to explain the Tibetan stories. It would lead us too far to enter into details here.

I should also mention, that whilst the Santals consider that a *bir sindiċ* corresponds to the Bengali *ban manush*, there is a small Munḍa tribe called, also by the Santals, *bir hoṛ*, lit. forest man, *hoṛ*, being the Santal name for a human being and for a Santal. They are very few in this district and have a rather curious reputation. Among other matters, they eat monkeys. The Santal traditions tell that the *bir hoṛ* some time long ago were outcasted from the ancestors of the Santals and related tribes (Kharwar, as they, according to these traditions, called themselves), because they had killed and eaten the hanuman monkey. Incidentally one might ask, might not some of the stories of races eating human flesh have their origin in the eating of monkeys ?

Several possible origins of these stories have been pointed out; all of them seem to be possible. The stories may really refer to animals (apes or bears) or to people. Outlaws are naturally quite possible, or people who have retired from the world. Without laying any stress on it there is one of these possibilities of which I should like to say just a little.

We have living in India, also on the borders of Tibet, many different tribes; they have very little in common and may be so different that strange ideas and tales are developed in connection with some of them. Things are seen, but not plainly enough to be understood, and so a story is started. *E.g.*, the Santals tell of the Mahratta raiders of some generations ago, that they had tremendous ears; at night they slept on one and covered themselves with the other!

That tribes with criminal tendencies live in mountains and from their resorts periodically come down to steal and plunder,

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is not unknown. We have had examples of such gangs even here in this district with its not very high hills. What whole tribes may practise individuals may also do.

One further remark may find a place here. There is in Norway a very rich folklore with stories of what are called "Troll," giants, ogres, or whatever may be the equivalent in English. They correspond somewhat to the Indian rakshasas; they are giants and eat people when they come across them. Attempts have been made to explain these "troll" as natural phenomena, indistinctly seen, and mostly seen in fear and superstition, the imagination having given them shape and all the rest. I remember how, some years ago, I saw a painting with Professor Moltke Moe (he was our great authority on folklore whilst living); this picture showed some peculiarly formed roots and other natural objects on a lake-shore in a peculiar evening light. When looking at it from a distance, it was exactly like a giant, somewhat misshapen and horrible looking, but just what such a being might be imagined to be. Possibly some explanations are to be found along similar lines out here also, personified natural phenomena.

Another suggestion as to possible origins of similar traditions is one brought forward in connection with the Hanuman of the Ramayana. It has been suggested that Hanuman and his tribe represent the aboriginal peoples.

While, as noted, animals may be taken to be human beings, and natural objects, or misunderstood and unrecognized natural phenomena may be taken to be supernatural beings of one kind or another, it seems that we have also to reckon with the same process reversed. Human beings are counted as animals.

Sir Herbert Risley in the Introductory Essay to his work The Castes and Tribes of Bengal at the very beginning refers to a stone panel found at Sanchi, depicting 'a strange religious ceremony. Under trees with conventional foliage and fruits, three women attired in tight clothing without skirts, kneel in prayer before a small shrine or altar. In the foreground, the leader of a procession of monkeys bears in both hands a bowl of liquid and stoops to offer it at the shrine. His solemn countenance and the grotesquely adoring gestures of his comrades seem intended to express reverence and humility. In the background four stately figures—two men and two women—of tall stature and regular features, clothed in flowing robes and wearing most elaborate turbans, look on with folded hands and apparent approval at this remarkable act of worship.' The panel is seen reproduced on the outside of the volumes of the work referred to.

Sir H. H. R. is of opinion that the monkeys are intended to represent the aboriginal races of India, and he refers also to 'the story in the Ramayana of the army of apes who assisted Rama in the invasion of Ceylon.' 'It (the picture described)

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shows us the higher race on friendly terms with the lower, but keenly conscious of the essential difference of type and not taking part in the ceremony at which they appear as patronizing spectators.'

To support this theory the following may be mentioned :—

It was (I am glad to be able to say that one now seldom hears such expressions) very common to hear the Santal aboriginals called apes, hanumans, by the Aryan inhabitants, and it was not a term of endearment, nor of respect. The hanuman is likely more honoured than those called so.

The Traditions of the Santals as handed down from *guru* to *cela* apparently have a reminiscence of the happenings that the Ramayana poetically describes. In the form of the traditions taken down by the late Mr. Skrefsrud from the dictation of a *guru*, named Kolean, the following lines (translated) occur: 'The ancestors have told, that in olden times when Ram raja lived all the Kharwars (the traditions say that before these peoples were split up into a number of tribes, now called Santals, Mundas, Hos, etc., they were one people and called Kharwar) went with him (Ram) to Lanka (Ceylon) and helped him to subdue Rabon raja, wherefore thenceforth for a very long time we had no fight or quarrel with the Hindus. They were living in the open country and we in the forests and in the hills.'

Another form of the traditions expressly denies that the ancestors went along with King Ram. This was told me by a *guru* many years ago.[1]

Taking the two forms of the tradition together it does not seem improbable that we have to do with a real reminiscence, and that part of the ancestors of the present-day Santals really accompanied King Ram on his expedition. It is not difficult to assume that some of the Kharwars were living not far from Ayodhya,[2] or in any case, not far from the route King Ram had to follow.

If it is a fact that the aboriginals, *in casu*, the Kharwars, materially assisted King Ram, this had to be acknowledged in a way. And a way extolling the aboriginals and at the same time keeping the distance was found. To some minds there is something of the supernatural in the doings of a hanuman.

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[1] Incidentally I may mention that I have a Santali account of the contents of the Ramayana: this is not, however, tradition, but without doubt a kind of résumé of what the Santals have heard at picture shows. Now and then wandering 'artists' find their way even to the Santal villages, show their pictures of the heroes and incidents of the Ramayana, and describe all the happenings. The Santal rendering is a miserable story with a good deal of grotesque matter and nothing of the beautiful periods of the original.

[2] Some of the Santal folk-tales even expressly state that what is told in the tale happened in Ayodhya.

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What the aboriginals did was more than human. The story of the monkey king in the Ramayana and the worshipping monkeys, on the Sanchi panel referred to, may be, and likely are, acknowledgments of something due to the aboriginals for assistance rendered. There is, however, a great difference. The Ramayana shows reverence and admiration; the panel picture shows superior toleration. It is unnecessary to follow this further.

The story of the Santal girl and the hanuman recorded in the Appendix is a strong corroboration of the theory advanced, provided the 'reading' is as proposed.

In response to an expressed wish three Santal folk-tales are recorded here below in an Appendix in the original Santali with a fairly literal translation and a few explanatory notes.

APPENDIX.

Santali Text.

Ghoṛmũhã reaṅ katha.

Noko ghoṛmũhã do miṭ lekan janwar kanako. Nokoaṅ moca do ṭhik sadomaṅ moca leka, se bohoṅ lutur jotoge ṭhik sadomaṅ lekage, ar hoṛmo tikin do ṭhik hoṛ hoṛmo lekage, ar jaṅga do hoṛ jaṅga lekage, menkhan miṭṭaṅ eskargetakoa. Ar daṛ do hoṛ khon hõ baṛtiko daṛ daṛeaṅa

Ado kathae, disom sendrare miṭṭaṅ koṛa miṭṭaṅ jele khudaukedea. Ado khudau khudaute, kathae, uni jel do (onko ghoṛmũhã ṭakako dudul kan tahẽkana) ado ekkalte, kathae, uni jel do onko ṭhengeye daṛ idikeṭ khan do, nui hõe khudau idikedegea, ar bae badae kana, notere do nonkan onkan janwar menaṅkoa mente do. Ado andhage uni koṛa do onko ṭhene calao goṭena.

Khange onko do nuiko ñelkede khanko saṗ goṭkedete ako ṭhenko idikedea jome laṛiṭ. Ar noko ghoṛmũhã do, kathae, hoṛ hõko jomkogea. Ado kathae, nui koṛako idikede khan do, paṛhil doko okkedea dhũãte. Ado kathae, uni koṛa hoṛmo khon tejo ar kicriċ se, kathae, bogeteko oḍokena.

Ado baṛsiñ pe mãhãko onkakedea, ado onakateko menketa, Nit do goṭa hoṛmobon chaṭaokedea, adobon itil ocolege.

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Adọ kathae, dinge sasañ suṛe dakako emaea. Arko ńir haparaoa arko mẹna, Tis abo khon baṛtiye daṛ daṛeaka, unre dọbon jọmea. Adọ kathae, din hilok setakreko ńir haparaoa, ar ruaṛkate dọ ṭakako dudula.

Ar onko lahateko saṗ idi akaťko dọ, kathae, onako sanamko biḍạu puraụkeťko khan dọ, miťṭañ marañ uṭạr karako condaea, ar onare gọtọmko dula miť kara. Adọ ona khubko tiṅgi basaña, adọ tọl koṭeamkate jiveťtege ona sunumreko khadle họťkoa. Ar bogeteko phanda baṛa gelaea. Adọ bhala tọl ḍhumbaḳkako khan dọ, cekateye phanda daṛeaka? Adọ miť ghaṛiko kuṇḍel baṛa gelayenge, adọko gọċenge.

Ar nui koṛa dọ tan man onako dọe ńẹleťkoa. Adọ kathae, onka goṭategе isinkate duaṛreko akakakoa, adọ oḍokoḳ bọlọḳ, kathae, mocateko pohaḳ jọmkoa. Adọ sanam jeltẹť jọm cabakate dọko raṛa ãṛgokoa ar im ar bọrọ ar laċkoko oḍokte ona dọ geť kuṭikateko suṛe dakaea sasañte arko jọma. Ar ona bọhọḳ reañ hataň oḍokkate ona dọ piṭhạkateko jọma.

Adọ uni koṛa dọ noako jọtọ kạmi tan mane ńẹlkeť khan dọe bọrọyena, are mẹnkeťa, Durrẹ! miť din dọ hapẹn iń hõ nonka lekako jọmeńa. Adọ noako kathage mọnẹ mọnẹteye guni bhạbiḳ kana. Adọe mẹnkeťa, Daṛelenre hõ noko khon dọ bań sọrọs hataṛoka. Adọ daṛekate miť din dọ ẹmọn iń daṛa sẹ; ẹkkalte apnar disomteń daṛ uṭạra. Onkae bud ṭhikkeťa.

Arhõ onakateye ńẹlkeťkoa, baňma, akoren eṅga apa khubko haṛam buḍhiyena mẹnkhan dọ saṛimteko capať rakaṗ goťkakoa; adọ ọṇḍẹ khon guḍrạu ńũroḳteko ńũr gọċenge. Adọ jọtọ họṛko họhọ jarwakateko metakoa, baňma, Aleaḳ kohṇḍa dọ bele ńũrente posaḳena.

Adọko metaea, Posaḳen khan mabon jọma.

Adọ kathae, uni hõ onka leka gọtọm sunumre isinete ato sudhaṛen họṛteko jọmea. Adọ ona hõe ńẹlkeťkoa.

Adọ tahẹn tahẹnte uni koṛa dọ, kathae, khub daṛeye ạikạukeťa, ḍahar ḍaharteko daṛre hõe sọrọsena.

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Adǫko mẹnkeťa, Baḍ kheṭrebon ńir haparaoa. Judi onare hõe soroslen khan dǫbon jǫmea.

Adǫ dosar hilok dǫ baḍ kheṭ talaťeko daṛeťa. Khange paḥil dǫ uni koṛageye soṛos goťlena. Khangeye hudis goťkeťa, Durrẹ! soṛoslen khan nãhãkko jǫmeńa. Adǫ onkae hudisket khan dǫ, baị baị machategeye daṛkeťte onkogeko soṛos goťena. Adǫ uni koṛae mẹnkeťa, Teheń siń ar ńindạ cekateń tahẽ aṅgalen khan gapa doń daṛgea. Jitạulenre mań daṛkeťge, arko saṗliń khan mako jǫmeńge. Ạkhirge baṅ ạkhir nenkate hõń gujuḳge, enkate hõń gujuḳge. Jãhã lekategе ińaḳ baca dǫ baṇuḳanaṅ. Mẹn iń daṛ gelaegea.

Adǫ kathae, ẹn hilok dǫ bako jǫmledea, jãhã lekateye ṭahẽ aṅgayengea. Adǫ kathae, bereť torae paṭhẹ kajak baṛa goťena. Adǫko metae kana, Ayo, teheń dǫ bejãe uriċem paṭhẹḳ kan dǫ!

Adǫe metaťkoa, Giṭiċte ḍeṅga bhagwa ḍhil akantiña, onateń sãohãyeťtiña.

Ar kathae, uni jǫme reaḳ hõ ẹn hiloḳgeko neṇḍa akawana, mẹn akawanako, Ńir haparao khon ruạṛ torage nui dǫbon jǫmea. Ar uni koṛa hõ ẹn hiloḳge daṛ reake mǫnẹ akawana. Adǫ kathae, jǫtǫ hǫṛ bereť baṛayenteko mẹnkeťa, Delabon, teheń do baḍ kheṭ piṇḍhạko cetantebon daṛ idia. Ǫkǫe bhala bon soṛos daṛeaḳa, teheńbon biḍạulenge.

Adǫ kathaeko calaoente miť ṭhen panteteko teṅgoyena nindara lekage. Adǫ jǫtǫ hǫṛ hẽ hũkate daṛko ẹhoṗ goťkeťa. Adǫ kathae, nui koṛa dǫ ẹhoṗ torarege khub tạpise daṛ goťkeťa, onko khone soṛos goťente baḍ piṇḍhạko parǫm torage baihaṛ piṇḍhạ sẹne mohṇḍa goťente oka sẹntege khub daṛaṅ daṛaṅ piṇḍhạ menaḳa, onkategeye mohṇḍạyente daṛe daṛkeťa sẹ, tiriť lekae daṛkeťa. Piṇḍhạko hõe dǫn parǫm idikeťa, ar onko dǫ dǫn parǫm torako somboť gur godoḳ kana.

Inạktege, kathae, nui dǫ ạḍi saṅgińe daṛkeťte noṭẹ Hǫṛ disomteye ńir hẹċente onko ṭhen khon dǫe paskaoenteye baṅcaoena.

Adǫ kathae, uni koṛage onko ghǫṛmũhạ katha dǫ hǫṛ ṭhene laikeťa, nonka onka kana mẹnte. Adǫ in

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khon Hoṛ hopon doko baḍae kana, nonka moca ar nonka hoṛmo ar nonkate hoṛko jometkoa mente.
Ado noa katha hõ eṇḍege mucaṭena.

TRANSLATION.

A Story of the Ghoṛmūhã.

These ghormuhas are a kind of animals. Their mouth is exactly like that of a horse, that is to say, their head and ears are all like that of a horse, and their body and hands are exactly like that of a human being; their feet are like the feet of a man, but they have only one leg.[1] As to running, they can also run quicker than a man.

People tell, it once happened that a young man at the annual hunt[2] chased a deer. As he was chasing it along, it so happened that the deer ran to where the ghormuhas were casting rupees,[3] and when the deer ran there the young man also followed it there, but he did not know that animals of this kind were to be found in that direction. So the young man went to them unawares.

When they saw him they at once caught him and took him to their place to eat him; for these ghormuhas, people tell, also eat human beings. Now when they had taken this young man to their place they first smoked[4] him, and, people tell, a great number of worms and lice came off the body of the young man.

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[1] In this story these beings are represented as having a horse's head: in other stories they are described as having simply the mouth of a horse. The name, which is borrowed from an Aryan language, may mean either 'horse-face' or 'horse-mouth'. It might be noted that this story expressly calls these beings 'animals', but the word should perhaps not be taken as meaning more than 'being'.

[2] The reference to the annual hunt may be a later introduction to explain the happenings to the listeners. The Santals have during the hot season every year a hunt where all males of the country-side are supposed to attend, hunting one day through a large forest or over a hill, meeting for the night at a previously fixed place and returning the next day hunting over the same ground in the opposite direction, after which they return home. This hunt formerly played a very large rôle in the life of the people, the night mentioned being spent in adjudicating quarrels and all social matters. Here all Santals were equal, an overchief having no more to say than a servant boy. This 'council of the burnt forest', as it is called, was presided over by a hunt-priest (*dihri* he is named; have the Santals got this from the Saurias in whose language a 'priest' is called the same?). The Santals look upon this council as their own 'High-court'; its importance has, however, dwindled very much during the later years, as is only natural with the law courts working.

[3] The Santals naturally have no idea how money is coined and take it that the coins are moulded.

[4] It might be remarked that this story was taken down long before the last war and the fumigation of Russian prisoners by the Germans. One wonders where they got this item. The nearest approach to it that the

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They continued to do the same for a couple of days: then they said, "Now we have trimmed his whole body, let us now fatten him."

Every day they gave him rice with meat and turmeric.[1] They ran races with him and said, "When he is able to outrun us, then we shall eat him." Every morning they ran a race with him, and when they came back they cast money.

In this way they tested those they had caught previously, and when they were satisfied they put a tremendous big iron pan[2] on the fire and filled this full with clarified butter. When they had thoroughly heated this, they tied their hands and feet and tossed them at once alive into this melted butter. They tried to kick, but when a person is tied up like that, how can he kick? They rolled round a moment, and so they died.

This young man stared at them whilst they were doing this. Now when they had in this way boiled a person whole they hung him in the door, and when they went out or came in they took a bit[3] and ate it. When they had consumed all the flesh they took the rest down and took out the liver and lungs and intestines, and cutting these into small pieces they cooked them with rice and turmeric and ate. The brain they also took out, baked it and ate it.[4]

When the young man saw all this done, and he was staring at it, he was frightened and said, "Woe is me, some day before long they will eat me also in the same way." He turned all this over in his mind and said, "Even if I should become strong, I shall not show myself superior to these in the meantime. But when I get strength I shall one day use my legs to good effect, I shall run straight home to my own country." He thought so and made his mind up to act so.

Santals have is the way in which they singe animals (to burn off hair, etc.) after they have killed them for food. Otherwise they resort to smoking to drive animals out of their lairs or to kill them. Santals generally have a sufficiency of the beings mentioned.

[1] The food described is not the ordinary Santal preparation; it is meant to describe something rich and savoury.

[2] The implement referred to is an iron pan ordinarily used for boiling the crushed sugar-cane in to prepare molasses. It is comparatively shallow, but very wide, likely the biggest vessel an ordinary Santal will know.

[3] The Santal word is the same as that used of ponies biting.

[4] The parts mentioned are considered delicacies, especially so by many carnivorous animals. With reference to the brain, it might be noted that when Santals perform a sacrifice the head with the brain is eaten (cooked with rice) by the sacrificer, sometimes assisted herein by other males, never by women. The brain may also be made into hand-bread, like here. That any specific gain should result from the eating of liver, etc., is not reflected on here. The Santals may have some vague notions on this point; I have heard it stated that they have eaten parts of leopards (very much against their taste, I think) because they believed that they in this way should acquire certain superior powers.

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After this he saw another thing with them, viz., when their own parents grew very old they threw them up on to the roof of their house; from there they rolled down and were killed by the fall. Thereupon they called all people together and said, "Our pumpkin ripened, fell down and burst."

The others then said to the man, "If it burst, let us eat it then."

Then, people tell, they boiled this one also in the way described in ghi and all the village people together ate him or her.[1] This the young man also saw them do.

As the days passed the young man commenced to feel very strong; when they raced along a road he also gained on them. So they said, "Now we shall run a race over high-lying rice-fields.[2] If he gains on us there also we shall eat him."

The next day they ran along over the rice-fields. To start with, the boy gained on the others. Then he suddenly remembered, "O! O! if I win the race they will eat me presently." With this in his mind, he ran at a fairly slow rate so they won. The young man then said to himself, "If I somehow or other can pass to-day and the coming night I shall surely run away to-morrow. If I win I shall get off; if they catch me they will eat me. Happen what may, I shall die if I stay, if I run I may also die; in any case I have no choice. Heigh ho, I shall have a try at running."

They did not eat him that day; in some way or other he passed the time till dawn next day. As soon as he got up he bound his loin cloth[3] tightly. They said to him, "O mother! you are girdling yourself exceedingly tight to-day!"

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[1] It might be very interesting to take up for investigation the item here mentioned, but space forbids. The Santals have never been anthropophagous, and look upon such practice with natural horror. As a matter of fact certain races are reported to do what is here told. It seems out of the question that a story like this should be due to imagination. It must be, it seems, either a reminiscence of the experience of someone who has been in contact with people who have such practices or a reproduction of a story heard from other peoples. The last is a possibility: it seems, however, to be more likely that the origin first suggested is the correct one. Then the interesting question arises, where have the ancestors of the present people been in contact with others who have for custom to eat their old people when they become decrepit. I have seen this practice mentioned in connection with the Gonds and also with the Birhor. I wonder, however, whether one might not get nearer to the origin by seeking towards the eastern and south-eastern countries bordering on India.

[2] The Santals have several classes of rice-fields, according to high or low position, the value of the fields corresponding to how high or low they are, the high ones are drier and consequently less valuable; they are also easier to pass along over. The low-lying paddy fields have more or less water always and on account of their natural position frequently have high ridges. This is in the hilly Santal country; the narrator naturally applies his own experience to his story.

[3] The loin cloth being what it is, it is necessary to make sure that it

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"Whilst lying down," he replied, "my loin cloth has become loose; I am arranging this."

Now they had fixed that day for eating him; they had agreed among themselves, "When we return from racing we shall immediately eat this one." But the young man had also decided to run away that very day. When they had all got up in the morning they said, "Come along, to-day we shall run the race over the rice-fields and the ridges. Who will win among us, we shall find that out to-day."

So they went, people tell, and fell in line in one place just as they had previously done. When all were ready and had said so,[1] they commenced to run. The young man ran from the very start with exceeding speed. He won on them and as soon as he had passed the high-lying rice-fields and ridges he ran straight for the ridges of the low-lying rice-fields, where there were high and steep ridges; running along in this direction he ran all he could; he ran something awful. He also jumped across the ridges, whilst those others floundered and fell on their faces whenever they tried to jump a ridge.

In this way, people tell, this young man ran very far, and coming here to the Santal country he escaped from those others and was saved.

And this young man told the story of the ghormuhas to the Santals, that it is so and so, and from that time the Santals know that beings having such a mouth and such a body exist, and that they eat human beings as described.

So there this story also is at an end.

Santali Text.

Hoṛ kuṛi hāṛũ koṛa reañ.

Sedae joḵheṉ, kathae, miṭṭañ atoren hoṛ gaḍa aṛe beḍare butko casleṭa. Aḍo ona but beleḵ joḵheṉ se gadaroḵ khange ona doṉ apan ąpinko horhoetakoa, jemoṉ jāhāe se jāhānko aloko joṃ. Aḍo kuṛi gidṛąko horhoko kolkakoa, ar oḵoeren gidṛą baṇuḵko hoṛ doṉ haṛam hoṛ se buḍhi hoṛ hõko horhoegea, ar ḍherteṭ doṉ gidṛąkoge.

Aḍo onko moṭore miṭṭañ doṉ juąn goḍoḵ kuṛigeye horhoṉ kan tahēkana Aḍo miṭṭañ hāṛũ aṇḍią doṉ ona

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is properly fixed before starting running or commencing strenuous work. It is always done.

[1] It is likely not necessary to take this statement as a modern introduction; competition of the kind mentioned is fairly old among these peoples, I think.

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bute ńelket khan doe menkeťa, Ceka lekate noa but doń joma? Miťtaň onko bulauko reaǩ iń upaia. Ado kathae, ceť larkore coń bahae gutuketťe but godateye calaoena. Ado ona baha do but godareye dohokaǩa, ar aċ do bute joma. Ar laǩgako hijuǩ khan, ona baha doe bagiaťge ar aċ doe darkeťge. Ado din hiloǩ onka agu aguteye parkaukeťko khan do, bako lagayea, jom ocoaegeako. Khange tayomte do onko tuluċe gateyena, ar baha do dingeye gutu aguia.

Khange uni juan kuriye tahēkana, uni kuri doe bulauente hāṛũ koṛa tuluċe gateyena, baňmae jāwãeoǩ kana. Khange onko soňgeten but horho gidra do oṛaǩre bako laiketa, baňma, uni phalna kuri do nonka onka? Ar uni kuri ma bae lai barayeť, okoe then hõ bae laiyeťa; menkhan onko sãoten gidrako ńel tioǩkeťkinte onko gidra do ako oṛaǩreko laileťa.

Ado lai laitege uni kuriren eňgat apat hõkin badaeketťe akinren hoponera bogetekin ruheťkedea. Ado apa bareko menkeťa, Ma nui hāṛũgebon gojea, ar baňkhan do nãhãǩ disom hor samaňre lajaobon ńama.

Ado kathae, onka menkate uni hāṛũ doko sendra ńamkedeteko tuń goċkedea. Ado apat haṛame menkeťtakoa, E ya, nui do babon gidiyea, nui dobon jalaoegea.

Ado kathae, onka menkate sahanko ńam jarwaketťe sarako benaoketa. Ado ona cetanreko dohokedete seňgelko lagaoaťa. Ado un jokhen uni kuri hõe calaoena. Ado apat baretko metae kana, Ceť lagiť am dom hijuǩ kana?

Adoe meneťa, Ceť lekape rapaǩede kana ona ńeńelgeń heċ akana; adoń menkeťa, bhala hor lekageko rapaǩedea se ceť leka.

Ina kathae ror purautege sara reaǩ seňgel do khub sardiyena. Ar tinre coń, kathae, gitil doe gocha tora akať taheǩana, adoe men goťketa, Mase, dada, ńelkope serma ipil doko ceka barae kana. Ado kathae, un jokhen joto hor noko hõko koyoǩ goťketa, un jokhen ona gitil do cotteye er goťkaťa; ado sanam horko cubaǩ andmandaoena. Un jokhen aċ do ona sardi seňgelreye don khańjoyenteye sati goċena.

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Adọ apat baret ạḍiko edreyena arko mẹnkeťa, Nui kuṛi dọ hạ̃ṛũ jivige tahẽkantaea, tọbẹrege uniaḱ mãyã bae chaḍaoleťa. Nõḱõe nonka aboe iạkeťbonteye dọn khańjọyena.

Adọ enka ruheť baṛawanteko um baṛayente oṛaḱteko calaoena.

Adọ niạ katha hõ ẹnḍẹge caba paḱ puciyena, bạnuḱanaṅ, chuṭiram.

TRANSLATION.

The Story of a Santal Girl and a Hanuman Boy.

Once upon a time long long ago, it is told, the inhabitants of a village had cultivated gram [1] on a plot of land lying along the bank of a river. When this gram was ripening or commencing to ripen they kept watch, each one at their own plot, to prevent people or any others from eating. They generally sent small girls to keep watch; they who had no children kept watch themselves, the old man or the old woman; mostly, however, the children kept watch.

Among these a girl just growing into maturity was watching. A male hanuman saw this gram and said, "How shall I manage to eat some of this gram? I must hit upon some means of fooling them." So, people tell, with some kind of bast or other he prepared flower garlands [2] and went to the gram field. Here he put the flowers down, while he himself was eating gram, and when people came to drive him off, he left the flowers there and ran away. Now when by daily bringing flowers in this way he had made them accustomed to it, they did not drive him off, but permitted him to eat. After some time he got on friendly terms with them and constantly prepared flower garlands and brought these.

The young girl referred to was there; she lost her head and became friends with the hanuman boy, that is to say, she married herself to him. Then did not the other gram-watching children tell this at home, saying, it is so and so with such and such a girl? The girl naturally did not tell; she did not tell anybody; but as the other children had seen the two they told in their respective homes.

The matter being told everywhere the girl's parents also

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[1] The gram is the Cicer arietinum, L. Santals living in the Bengal districts are cultivating this; but it is doubtful whether they have been doing so for a long time.

[2] At certain festivals the Santals may put flowers on strings to decorate with; they may also use such garlands round the neck or in the hair, but very likely it is not an original Santal custom.

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got to know of it, and they gave their daughter a good scolding. And the father and brothers[1] of the girl said, "Come, we shall kill this hanuman, otherwise we shall be disgraced before the people of the land."

Thereupon, it is told, they tracked him down and killed him shooting him with an arrow. Then the father said, "I say, boys, we shall not throw him away, we shall cremate him."

Having said so, people tell, they collected firewood and built a funeral pyre, and having put him on this they set fire to it. At that time the girl also went there. Her father and brothers said to her: "For what purpose are you coming here?"

She answered, "I have come to see how you are cremating him; I said to myself, I wonder whether they are cremating him like a man or how they are doing it."

As she had said this the fire of the pyre commenced to burn very high. Now the girl had, as she came along, put some sand in a fold of her cloth. Then she said suddenly, "Look, elder brother, look at the stars, what are they doing." Now all of them also looked up, and at that time she quickly scattered the sand in the air, and all of them got sand in their eyes and became quite confused. During this the girl herself jumped up and threw herself down on the fiercely burning pyre and burned herself to death.

But her father and brothers became very angry and said, "This girl surely had the soul of a hanuman; therefore she did not give up her affection for him. Look, she did so and so to us and jumped upon the pyre."

After they had scolded in this way they bathed and went home.

So now there is an end of this story also; there is nothing more, nothing at all.

While many details of the above story have been adapted to Santal ideas and customs, as is always done when a fairy tale is borrowed and told by Santals, the substratum of the whole is non-Santal. The Santals have never practised sati; they have adopted cremation from the Hindus; formerly they buried their dead ones.

The position of a Santal woman is very much more free than among the caste people, and although cases of self-destruction, on account of the faithlessness of a lover or a husdand, are not unknown, they are very rare and not occurring after the death of a lover. Women are known to have committed suicide by hanging, because they have been caught with consan-

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[1] *Apa bare*, father and brothers of a girl, are always supposed to be the natural guardians and defenders of an unmarried daughter or sister.

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guineous males; they were unable to face the disgrace and the horror of the people.

That a Santal girl should fall in love with a hanuman is unheard, and unnatural, even in a fairy tale. I believe crimen bestialitatis is unknown among Santal women.

The explanation of the story seems to be that it refers to other actors than a Santal girl and a hanuman. If we for the hanuman substitute an aboriginal man, perhaps a Santal, and for the Santal girl read a Hindu woman, the story comes into another light and may be a reminiscence of something that has really happened.

Santali Text.

Hāṛũ koṛa reaṅ katha.

Tisre coṅ, kathae, Bhadoṛ cando joṅkheṇ aema gidṛa gaiko aḍa horho kan tahēkana, ar ona thenge miltaṅ maraṅ ñōṅ ḍobhaṅre kicriċ doho baṛakateko umoṅ kan tahēkana. Adǫ kathae, oka seṇ khon coṅ hāṛũ koṛa doe ñir heċ goṭente miltẹn kuṛi gidṛa reaṅ lumaṃ kicriċ do dareteye aṭkir rakaṗkeṭa. Khange onko gidṛa do aṵa paṗakateko ñir rakaṗente apan apinaṅ kicriċko halaṅ baṛakeṭtakoa. Khange miṭ hoṛaṅ do baṇuṅ. Khange dare seṇko beṅgeṭ rakaṗ-keṭteko ṇelkede, hāṛũi hobor akaṭ. Khange adǫko koeye kanạ, Dentae, hāṛũ koṛa; kicriċ ẹmkataeme.

Adǫ hāṛũi meṇkeṭa, Iṅ thene reben khan doṅ ẹmkataea, ar baṅkhan ohoṅ ẹmlea.

Khange bhageteko capaṭede kana. Khange uni do cotteye aṭkir rakaṗkeṭa. Khange adǫm gidṛa ar uniye aṭkir akaṭtae gidṛa do oṛakteko ñir calaoente eṅgat apatko laiaṭkoa. Khange onko do horko riạu-keṭkote aṅ sarko ṅamkeṭteko heċena, adǫko metae kana, Dentae, hāṛũ koṛa; kicriċ ẹmkataeme, ar baṅkhan dole tuṅ goċmea.

Adoe meṇkeṭa, Iṅ thene reben khan iṅ ẹmkataea, ar baṅkhan do baṅ.

Adǫ onkae meṇkeṭ khan do tutuṅko porṭonkeṭa Ạdi baṛiċ sarko aṛaṅkeṭa, meṇkhan baṅgeko tuṅ jos daṛeae kana. Khange tuṅ tuṅteko laṅgayen khanko meṇkeṭa, Nui gidṛa do cele hāṛũrege likha menaṅtaea, tobetege babon tuṅ jos daṛeae kana. Adǫ khange uniren eṅgat apatko raṅkeṭa. Adǫko sereṅa:

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Dęntae, hąṛũ koṛa, mąi reaƙ lumam luguṛi.
Iń ṭhene rębęn rębęn nęmkataeyań,
Iń ṭhene rębęn rębęn calkataeań.

Adǫ eṅgattęť iną dǫe kǫekedea, adǫ bae emade khan dǫ, apattęť hõ onka lekae kǫeye kana; sereń dǫ enkage. Kakattęť hõ enkageye kǫekedea, kąkittęť hõ enkage, sę jǫtǫ hǫṛ enkageko kǫekedea, męnkhan ǫkǫe hõ bae emaťkoa.

Adǫ sęsre uni kuṛigeye kǫekede khan dǫ, kathae, kicriċgeye ṭąmkur gǫťadea. Khange uni kuṛi dǫ ona kicriċe saƥ gǫťkeť khan dǫ, kathae, onategeye ǫr rakaƥ gǫťkedea. Adǫ ǫṇdęgeye bande ocokedeteye gugu taƥkedea. Ar uni kuṛi hõ unireye khusiyena, adǫ eṅgat apate męn oṭoaťkoa, Ma ape dǫ tahẽkoƙpe; iń dǫń calaƙ kana.

Adǫ kathae, buruteye idikedea, ar miťṭań dhiri dandere cią akať tahẽkana, ona danderteye idikedea. Siń mǫtǫre dǫ bahrekore sę dare buṭąkorekin tahęna, ar ńindą dǫ ona danderrekin gitiċa. Adǫ ul jǫƙ din dǫ ulkin jǫma; aċ dǫ dareteye dęjoƙa are ruku ńũraea, uni dǫe jǫma. Ar adǫm dǫ gęr gęrkateye ńũr gǫťaea; ona dǫ halań rakaƥkateye ńęl pąhila; gęr cinhąi ńamle khan dǫ bae jǫma, ona dǫe capať giḍikaƙa. Adǫ uni hąṛũ koṛa dǫe męna, Cedaƙ iń itąť dǫ bam jǫmeťa?

Adǫe metaea, Jǫm bi akante bąń jǫmeťa, tinąƙ iń jǫma? Jǫm jǫmteń laṅgayena.

Onka, kathae, ul din dǫ ul, kaṇthaṛ din dǫ kaṇthaṛ, sę jãhãnaƙge jǫ beleƙ, onakogekin jǫma ar jãhãnaƙ jǫjǫm sanaye, onageye ąguaea. Adǫ khange phǫl ḍǫl jǫmte uni kuṛi dǫe mǫkǫńena; adǫe metadea, Iń dǫ noako jǫmte dǫń mǫkǫńena, daka jǫm sanayediń kana; dę okarem daka ocońa?

Adǫ uniye męnkeťa, Ho, ona reaƙ dǫ alom bhabnaƙa, ona dǫń ńawama. Adǫe metadea, Delań bajarte am dǫ nahaƙ bajar noa sare dare buṭąre tahẽ hataṛoƙme, iṅge bajar khon dǫń ąguitalaña.

Adǫ sąri bajartekin calaoena, aċ dǫ dare buṭąreye dǫhǫkedete bajarte uni hąṛũ dǫe calaoena. Adǫ kuṅkąl ṭhen khon celań ar karahiye ąṭkirkeťte uni kuṛi ṭhene ągukeťa; ar laḍuko cąktiko bogeteye ąguadea ar uni kuṛi dǫe jǫmeťa. Ar caole hõ, kathae, ghąṛi ghąṛiye

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cuṗuṫ ąguae kana, ar buluṅ, sasaṅ, dąl, jǫtǫgeye ąguadea. Khange uni kuṛi dǫ sahankoe ńamkeṫte seṅgęle jolkeṫa are daka utukeṫa, ar bana hǫṛkin jǫmkeṫa. Khange kathae, uni hą̃ṛũ hõ daheye jǫmkeṫ khan, ąḍi sebele ąikąukeṫa, adǫe metae kana, Ią, nonkage adǫ dakaetalaṅme.

Adǫe metadea, Ąguaṅme, tǫbę̄ baṅ dakaea?
Adǫe mę̱nkeṫa, Hę̄, ona doṅ daṛeaka.

Adǫ kathae, miṫtaṅ bagwan tahę̄kana, ǫṇḍę̱kin mąṇḍiąuena; adǫ ǫṇḍę̱ge tin din cǫkin tahę̄ana. Adǫ uni kuṛiye mę̱nkeṫa, Noa jǫmakte ma purungem emaṅ kan, mę̱nkhan kicriċ thǫ bam kicriċediṅ kana.

Adǫe mę̱nkeṫa, Acha, ona hõṅ ąguama.

Adǫ kathae, bajarteye calaoena; adǫ kicriċ ṭhenge bako sor ocoae kan, bogeteko humąkede kan. Khange bae ągu daṛeaṫa. Ar tayǫmte dǫ uni kuṛi hõ ṭąṇḍire gitiċ gitiċteye ąṛisena. Adǫ uni hą̃ṛũi mę̱nkeṫa, Delaṅ burutegelaṅ calaka, ǫṇḍę̱ khonge kicriċ dǫlaṅ juṛąua. Adǫ kathae, burutekin calaoena; adǫ ulko kaṇthaṛkoe goṫadea, adǫe metadea, Do haṭiąte idite ąkriṅme ar kicriċ kiriṅme.

Adǫ kathae, onakoe idikeṫte ąkriṅkateye kicriċena, adǫ ǫṇḍę̱geye bande pheraoente hǫṛ ato sę̱ne calao idiyente kisą̃ṛ ṭhene kąmṛ̃iyena, uni hą̃ṛũ ṭhen dǫ bae ruąṛlena. Adǫ uni hą̃ṛũ dǫe ńę̱l hǫr bhagaoente iną dhara dhąri goṭae ńam baṛakedea; adǫ bae ńam daṛeade khan, ąḍiye bhabnayena, ar adǫ buruteye ruąṛ calaǫena. Ar uni kuṛi dǫ tahę̄yente hǫṛ koṛa ṭhene jãwãeyena, adǫ ę̱ndę̱geye tahę̄yena.

Katha dǫ cabayena.

Translation.

The Story of a Hanuman Boy.

Some time, who knows when, it so happened, people tell, that once in the month of Bhador a number of children were watching cattle that were having their midday rest; near the place was a fairly large pool of water, and having taken off their clothes they were bathing there. At that moment, people tell, a hanuman boy suddenly came running from somewhere and snatching away a girl's silk cloth he ran up a tree, taking

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it with him. The children ran frantic up out of the water and looked for their clothes. There was one whose cloth was not there. They looked up into the tree and saw the hanuman, he had it in his arms. And they commenced to beg him: "Give it, you hanuman boy, give her back her cloth."

But the hanuman said: "If she consents to stay with me I shall give it back to her, otherwise I shall certainly not give it."

They threw any number of stones to hit him; but he only climbed higher up taking the cloth with him. Some of the children and the girl whose cloth he had snatched away then ran home and told their parents. These collected people and having laid hold of their bows and arrows they went and commenced to speak to the hanuman: "Give it, you hanuman boy, give her back her cloth; if not we shall shoot you and kill you."

He said: "If she consents to stay with me I shall give it back to her, otherwise not."

As he spoke in this way they commenced to shoot; they let off an immense number of arrows, but they were utterly unable to hit him. When they got tired of shooting they said: "This girl's fate must surely be with this hanuman; this is why we are unable to hit him with our arrows." Then her parents commenced to cry, singing as follows:—

"Give it, you hanuman boy, give the girl's silken cloth!"
He answered:
"If she consents to stay with me I shall give her cloth;
If she consents to stay with me I shall hand over her cloth."

The girl's mother begged him with these words; but as he did not give it to her, the father also begged him, singing in the same way. Her uncle begged in the same way, her aunt also, and all of them implored him in the same way; but he did not give it to any of them.

When at last the girl herself begged him, he at once, people tell, let the cloth hang down towards her; and when the girl caught hold of the cloth he at once pulled her up with the cloth. And having made her put her cloth on there he at once took her on his back and was off with her. Now the girl also was pleased with having him, so she said to her parents, as she left: "You stay where you are; I am off."

The hanuman, people tell, took her to the hills; he had discovered a rockcave and took her there. During day-time they were living in the open or under trees, and at night they were sleeping in the cave. During the mango season they were living on mangoes; he himself climbed the trees and shook fruit down to her, and she was eating. Now and then he would let a fruit fall down to her after having bitten it;

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she would pick it up and first have a look at it; if she saw the marks of teeth she did not eat it, but threw it away. And the hanuman boy would say: "Why will you not eat what has been touched by me?"

She would answer: "I have had enough, therefore I do not eat any; how much am I to eat? I am tired of eating and eating."

In this way, people tell, during the mango season they were eating mangoes, during the jack fruit season jack fruit, or whatever fruit was in season, and whatever she had a wish to eat he brought to her. At last she got tired of eating only fruits and said to him: "I am tired of eating only this kind; I want to eat rice; please, where will you let me cook rice?"

He replied: "Oh, don't let this trouble you; I shall get you that." And he said to her: "Come along, let us go to the bazar; you remain under some tree this side of the bazar during my absence; I shall bring what is needed for us from the bazar."

Truth to tell, he went to the bazar; the hanuman left her sitting at the foot of a tree, whilst he himself went there. From a potter he snatched away a cooking pot and an earthenware flattish dish and brought these to the girl; he brought her also any amount of sweetmeats and cakes, and the girl was eating it. And, people tell, again and again he brought her also handfuls of rice, and salt, turmeric, split peas, in fact all he brought to her. The girl then found firewood and made a fire and prepared rice and curry, and they both ate. And, people tell, when the hanuman boy also had eaten some curds, he thought it tasted excellently and said to the girl: "I say, prepare food for us again in this way."

"Bring me the necessary," she replied; "then only I shall be able to prepare food."

He answered back: "Yes, I shall be able to do so."

There was a grove of trees somewhere, people tell, and there they remained; they lived there for some time, who knows how long. Then the girl said: "You are giving me this food and I am quite satisfied; but as for clothes, you do not clothe me."

"All right," he said, "I shall bring you clothes also."

He went to the bazar, people tell; but there they would not let him come near to the clothes; they beat him again and again. He was unable to bring this. Later on, the girl got tired of always sleeping in the open; and the hanuman said: "Come, let us go the hills; from there we shall provide clothes." So they went to the hills, and he plucked mangoes and jack fruit and brought her and said to her: "Do, take these to the market, sell them and buy clothes."

And she, people tell, took the fruit there and having sold it she procured clothes; and having changed her clothes and

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taken this on she went to a Santal village and took service with a wealthy man; she did not go back to the hanuman. The hanuman waited for her until he understood that she would not come; thereupon he searched for her everywhere in the neighbourhood; and as he was unable to find her he was very grieved and returned to the hills. The girl stayed where she was and was married to a Santal youth; and there she remained. The story is ended.

Several details of the story reproduced above might call for some explanatory remarks. To save space I shall confine myself to some general observations.

The story has been told so many times that it has become a true folk-tale. But even so the reader cannot avoid being struck by the behaviour of the hanuman; except for a few details naturally brought in when mentioning a monkey the whole story seems to be a tale of human beings, only that they are of different races. The hanuman represents an aboriginal or savage man, the girl belongs to some other race. The story might seem to presuppose that the girl is a Santal, in which case the hanuman would be some other race. One might in this case suggest that the story originated with people living in the far East. Another possibility, perhaps more likely, is that the story may have originated with people of the Aryan race, has afterwards been adopted by the Santals or their ancestors, and in the course of telling has been adapted to Santal ideas and got its present form. In any case there is every probability that the hanuman here represents a human being, deemed inferior to the race of the narrator.

The Santals have several stories referring to beings called by them rakas or rakhas (the word comes from Sanskrit rākshasa); I have sometimes got the impression that these beings might really be people of a foreign and savage race.

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On the Worship of the Deity Jalpeshvara in the District of Jalpaiguri in Northern Bengal.

By Sarat Chandra Mitra.

Jalpaiguri is one of the most northerly districts of the Province of Bengal. The tutelary deity of this district is Jalpeshvara or 'The Lord of Jalpesh'. The Deity's shrine is situated in the village of Jalpesh, which is situated about 12 miles to the east of the Jalpaiguri town. Hearing about the great

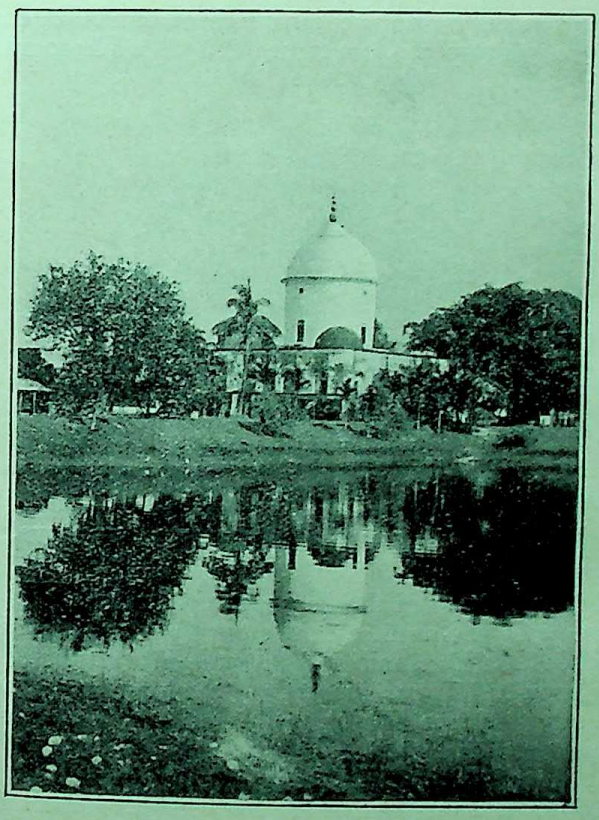

Fig. 1.—The Jalpeshvara Temple as seen from outside.

sanctity of this shrine and of the great veneration in which the deity Jalpeshvara is held by the people of the locality, I, accompanied by Mr. T. Mitra, Executive Engineer, P.W.D., Duars Roads Division, paid a visit to this temple on Tuesday, the 23rd

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December, 1930. This shrine or temple has a round cupola at the top and four rooms at four corners of the quadrangular basement-storey. The lower portion of the walls of the basement-storey is ancient and built with old small-sized bricks, while the upper portion of the basement-storey and the cupola are recent additions. A fine view of the temple of Jalpeshvara is represented in figure 1.

Proceeding inside the temple, we found that in the *sanctum sanctorum* was the stone worshipped as the symbol of Siva, which was placed inside a miniature well in the stone-flagged floor. As the 'dim religious light' of the interior rendered the stone-representative of Siva somewhat invisible, I felt it with my right hand and found that it was a block of (most likely) grey granite-like stone thinned at the top into the shape of a wedge, there being a ridge at the top of the wedge, while the sides sloped downwards. There are three bands on one side of the stone, as will appear from figure 2. This photograph gives

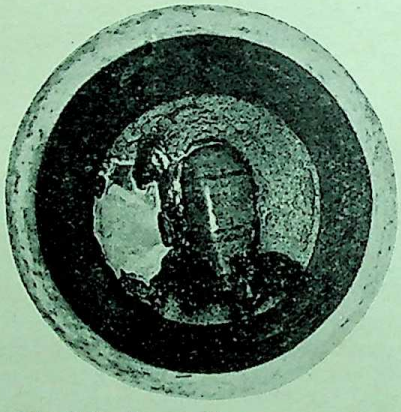

FIG. 2.—The Jalpeshvara Stone as seen from above.

an excellent top-view of the Jalpeshvara stone.

Just above the surface of the cavity in which this stone is lodged, there is a *Yoni* made of Jeypore marble which has been recently provided by a wealthy Marwari gentleman of the locality. Its shape is shown in figure 3. The letter *A* shows the miniature well in which the stone is placed. The well is about 1 foot deep. The Jalpeshvara stone is approximately 8 inches long and 4 inches broad. There is a local tradition to the effect that the bottom of the stone goes deep down into the earth and that the bottom cannot be reached howsoever much the surrounding earth is excavated. It may be stated here that the stone and the *Yoni* stand just below the centre of the rounded cupola which surmounts the shrine.

On enquiry from the attendant Brahman priest, I learnt

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the following tradition about the evolution of the cult of this deity :—

In ancient times, there were no Hindu residents in this part of Jalpaiguri. It was inhabited by the Kochs and the

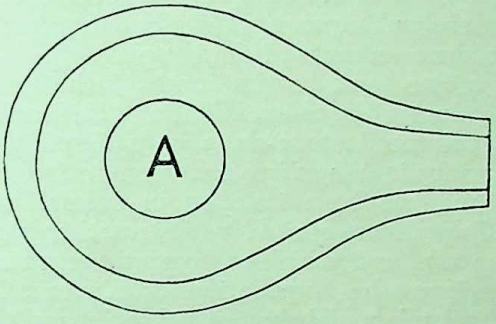

FIG. 3.—Marble *Yoni*.

Mechs who were the original inhabitants of this locality. Being attracted by the unusual shape of this stone, they worshipped it. It may be stated here that these Kochs and Mechs were Mongoloid tribes who had probably migrated from Burma and had settled in these parts. They gradually accepted the Hindu creed and adopted Hindu manners and customs.

About 400 or 500 years ago, Mahendra Deo Nārāyan, Raja of Cooch Behar, built a rude temple over this stone. This rude temple is the nucleus of the present splendid temple in which the deity is installed. The temple built by Raja Mahendra Deo was partially destroyed by the great earthquake of the 11th June, 1897. The present temple was built a few years back on the remains of the old temple.

This deity is worshipped by the Hindu inhabitants of Jalpaiguri for the attainment of whatever their hearts may desire. In the month of Baisakh (April-May) local women, who are desirous of having sons born to them, come to this temple and worship this deity with libations of milk which fills up the well, and pray for the boon of sons.

As this stone has now become a recognised symbol of Siva and is dubbed with the appellation of Jalpeshvara Mahādeva, a great festival is held here on the occasion of the Sivaratri festival in the month of Falguna (February-March). A fair is also held here on that occasion.

The priest informed me further that the *mantra* or the prayer-formula with which this deity is worshipped is :—

जल्पेश्वराय शिवाय नमः ॥

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Translation.

I make obeisance to the (deity) Jalpeshvara Siva.

Offerings of cooked rice (4 seers), pulses (1 seer) and vegetables are presented to the deity in the morning, and pancakes locally known as *luchis*, prepared from ½ seer of flour and fried in ghee and half a seer of milk are offered in the evening. These food-offerings are subsequently distributed to the attendant priest and the three servants of the temple.

There is a fine tank to the south of the temple. I was informed that, during the re-excavation of this tank a few years ago, several sculptured stone-slabs were found. One of these slabs with carvings in *alto relievo* has been dubbed with the title of Vasudeva and has been installed in a small temple to the east of the Jalpeshvara-shrine, while another slab, which is broken at the top and, which at present, bears no carvings on it has been given the appellation of Kuvera, King of the Yakshas. This broken slab has also been installed in a small temple which is situated to the south of the great sanctuary.

Both these minor deities, whose images are undoubtedly of Hindu origin, also appear to be worshipped, for I found offerings of flowers upon them.

Near the roots of a *peepul* tree (*Ficus religiosa*) on the south of the great temple, are to be found two or three stone slabs which have no carvings on them. They are not worshipped.

From an examination of the foregoing description of the Cult of the Deity Jalpeshvara, the following questions arise for purposes of discussion :—

(1) Whether the Cult of Jalpeshvara was in its inception, a form of primitive or aboriginal religious belief ? Whether it was, in that stage, Animism or Fetishism ?

(2) Whether there are instances on record of any nation of antiquity having worshipped stones ?

(3) Whether the Jalpeshvara-stone is of meteoric origin ? If so, was it embedded in the earth and, by its fall from the sky, attracted the notice of the Mechs and Kochs and led them to worship it ?

(4) In what stage of the evolution of Hindu religious worship or polytheism does the Cult of Jalpeshvara, in its present form, stand ?

(5) Why do the local women pray to Jalpeshvara for sons ?

I shall take up for discussion the questions (1), (2), and (3) together.

The ancient Hebrews, the Greeks, and the Romans worshipped stones and stone monoliths. The boulders of stones streaked with marks of vermilion, which are to be found at the roots of

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banyan (*Ficus indica*) and pipal trees (*Ficus religiosa*) in almost every village in the Indian countryside are instances of stone-worship by the Hindus. The lake-goddess, who is worshipped in a shrine on an island in the Chilka Lake in Orissa, is represented by an unhewn block of stone. Similarly, I have seen, in the very heart of the town of Jalpaiguri, an instance of the worship of stones by the Hindus. Just in front of the Swiss Chalet-like bungalow occupied by the Executive Engineer, P.W.D., Duars Roads Division, and midway in the open space between the gate of the said bungalow and the western bank of the Karala River, there are two pipal trees and a block of black rough stone (like jhāmā brick). There are vermilion marks on this block stone and the ignorant Hindus of this neighbourhood are beginning to worship it. This worship is, in its present stage, a form of Fetishism because the stone is being worshipped in its own character as a symbol. It may, however, develop, in course of time, into Siva worship.

Similarly, the Cult of Jalpeshvara may have been, in its inception, an instance of stone-worship by the primitive or aboriginal Kochs and Mechs and been borrowed from them by the Hindus.

The facts of the Jalpeshvara-stone being embedded in the earth and of the existence of indentations and fissures thereon lead me to suppose that this stone is of meteoric origin. The famous black stone which is built into the wall of the Kabah or the Sanctuary at Mecca and which is kissed by every Mahomedan pilgrim to that holy shrine is believed by many to be of meteoric origin. Thus we have two instances, on record, of meteoric stones being regarded as sacred by the Hindus and the Mahomedans respectively.

Having fallen from the sky, this meteoric stone was regarded by the aboriginal Kochs and Mechs as being the dwelling-place of an invisible spirit or being and was, therefore, regarded by them as sacred and was consequently worshipped. The Kolarian tribes of Chota Nagpore call the neolithic celts *ther-diri* or ' thunder-stones ' and believe them to have fallen from the sky. They, therefore, regard them as sacred and possessed of curative properties. Occasionally, they worship these stones. In the view that the Jalpeshvara-stone is of meteoric origin, the Cult of Jalpeshvara is a form of Animism.

If the Jalpeshvara-stone is of volcanic origin, the Cult of Jalpeshvara is a form of Fetishism, because the aboriginal Kochs and Mechs worshipped the stone in its own character as a symbol and not as the dwelling-place of an invisible spirit. They worshipped it on account of its curious shape. But this view about its volcanic origin is untenable, if we take into consideration the two important facts, (1) that the Jalpeshvara-stone is embedded in the earth which is quite contrary to the universal procedure of placing *Siva-lingams* above the ground,

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and (2) that the stone bears indentations on its sides, the origin of which can only be explained by the fact that while passing through the denser atmosphere of the earth, the sides became by friction with air indented and the top assumed the shape of a wedge.

As regards the foregoing Question No. (4), it may be said that the Cult of Jalpeshvara, in its present form, is in the third stage of the evolution of Hindu religious beliefs, which has been designated by the Folklore Society of London as being 'Heterogeneous Polytheism with Idolatry', as this deity has now been installed as a member of the Higher Pantheon of the Hindus and has been dubbed with the title of Jalpeshvara Siva or an incarnation of Mahādeva. There is no trace of this deity having passed through the second stage and of having acted as *dvāra-pāla* (warder) of a higher God, nor of having passed through the first stage and of having been worshipped as a third-class godling presiding over a *devadekhni*-temple.

As regards Question No. (5) *supra*, its answer is easy to give for the phallus or *Siva-linga* and the surrounding *Yoni* are symbols of the procreative energy. Therefore, I am inclined to think that the local womenfolk worship the deity Jalpeshvara for obtaining the boon of having sons born to them. In many parts of Bengal, Hindu women worship various other incarnations of Siva for obtaining similar boons.

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The Hindu Calendar and the Earlier Siddhantas.

By Harit Krishna Deb.

Hindu Astronomy, as has long been known, may be considered to have been, at some epoch prior to 500 A.D., influenced by Grecian astronomy. When precisely the influence began to operate, we do not yet know. Prof. Whitney expressed the opinion that, since the Hindu system is wanting in the improvements introduced into Grecian astronomy by Ptolemy (c. 150 A.D.) and since there are differences in detail between the Hindu system and the teaching of the *Syntaxis* such as in the different dimensions assigned to the epicycles of the planets, the Hindus derived their knowledge of Western astronomy at an epoch anterior to Ptolemy. Against this view it has been urged by Thibaut,[1] following Biot, that it is not impossible for the Hindus to have derived their knowledge of Alexandrian astronomy not directly from works like those of Hipparchus or Ptolemy but indirectly and imperfectly from manuals used by Greek astrologers and almanac-makers who might have neglected to take account of refinements introduced by the great astronomers and might have at the same time preserved elements of older doctrines, just for facility in calculation.

Whatever may have been the actual date of introduction of Grecian astronomy, the principles of which may have been introduced not suddenly at one particular epoch but gradually and at different periods, the earlier Indian astronomers adhered to what is known as the quinquennial *yuga* in framing their calendar. The *yuga* is based on the assumption that 1830 days = 5 Solar years = 62 Synodic revolutions of the moon = 67 Sideral revolutions of the moon. The starting point of the *yuga* is, in all authorities except one, made to coincide with Māgha *śukla* 1, when both the sun and the moon stand at the beginning of the nakṣatra Dhaniṣṭhā. The exception referred to is the Jaina work Sūrya Prajñapti, according to which a *yuga* begins with the moon at the beginning of the nakṣatra Abhijit, and the sun in opposition.

In the Paitāmaha Siddhānta, of which we have a representation in Ch. XII of Varāha Mihira's Pañcasiddhāntikā, a

[1] *Pañchasiddhāntikā*, text, commentary and translation, ed. Thibaut and Sudhākara Dvivedī, Benares, 1889; Introduction, p. LI, where reference is made to Whitney and Biot. No copy of this valuable volume seems to exist in the Asiatic Society's collection. Biot's opinion is found in his *Études sur l' astronomie indienne et sur l' astronomie Chinoise*, Paris, 1862, pp. 205ff as kindly looked up for me by Mr. van Manen.

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definite year is mentioned for the commencement of a quinquennial yuga. In st. 2, we read :—

dvyunaṁ Śakendrakālaṁ pañcabhir uddhṛtya śeṣavarṣāṇām |
dyugaṇaṁ Māghasitādyam kuryād dyugaṇaṁ tadahanyudayāt ||

'Subtract 2 from the *Śakendra-kāla* (the years of the Śaka era) and divide by 5; with the remainder form the *ahargaṇa* beginning with the white half of Māgha, the *ahargaṇa* being calculated from the beginning of the day, *i.e.* from sunrise.' As the *Śakendra-kāla* represents the number of Śaka years elapsed, a new *yuga*, as rightly observed by Thibaut (*op. cit.*, p. 67), began in 2 Śaka elapsed, st. 3 runs :—

saikasaṣṭhyaṁśe gaṇe tithir bhamārkaṁ navāhate' kṣyarkaiḥ |
digrasabhāgaiḥ saptabhirūnaṁ śaśibhaṁ Dhaniṣṭhādyam ||

'Add to the *ahargaṇa* its own 61st part; the result is the *tithi*. Multiply it by 9, and divide by 122; the result is the Sun's nakṣatra. Multiply the ahargaṇa by 7, divide by 610, and deduct (the result from the ahargaṇa); the result is the required nakṣatra, reckoning from Dhaniṣṭhā.' It will be observed that the sun's position is given here with reference to the *nakṣatra*, not with reference to the *rāśi* as in the later period. We may infer that, even after Śaka 2 elapsed, the *rāśi*-system had not yet supplanted the *nakṣatra*-system in calculating solar motion.

Again, since st. 2, reckons a new quinquennial yuga to start from Śaka 2 elapsed or 81 A.D., we may infer that the five-yearly yuga was in vogue at least down to 86 A.D.; for the rule laid down in the Paitāmaha Sid., if it had been composed prior to that year, could not have directed us to subtract 2 from the Śakendrakāla and then *divide by* 5. We have confirmatory evidence from Varāha Mihira's Bṛhat Saṁhitā.[1]

In chapter 8 of that work is given an exposition of the 60 years cycle of Jupiter composed, as he says, of 12 five-yearly periods, the years of every such period being designated : (1) saṁvatsara, (2) parivatsara, (3) idāvatsara, (4) anuvatsara, (5) idvatsara. These designations correspond to these named by Garga as quoted in the commentary on Jyotisha, 10. (Vedic Index, II, 412. n. 9.) And, as the five-yearly yuga is specially associated with the name of Garga, we may infer that

[1] Saṁvatsaro' gniḥ parivatsaro'rka idādikaḥ śītamayūkhamālī |
prajāpituścāpyanuvatsaraḥ syād idvatsaraḥ śailasutāpatiś ca ||
(Br. S., 8. 24).

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the 60-years cycle of Jupiter as expounded by V. M. consisted of 12 five-yearly yugas. The inference is borne out by a consideration of V. M's rule for finding out the Jovian saṁvatsara, set forth in the same connexion :—

jātāni varṣāṇi Śakendrakālād 'dhatāni rudrair' guṇayec' caturbhiḥ |
navāṣṭapañcāṣṭayutāni kṛtvā vibhājayec' chūnyaśarāgarāmaiḥ || 20.
phalena yuktaṁ Śakabhūpakālam saṁśodhya ṣaṣṭyāviṣayairvibhajya |
yugāni Nārāyaṇapūrvakāṇi labdhāni śeṣāḥ kramaśaḥ samāḥ syuḥ || Bṛ. S., 8. 21.

'Multiply the years elapsed of the Śaka king by 11, and (multiply) the product by 4; add 8589; divide by 3750; to the quotient add the Śaka years (elapsed); divide by 60; divide the remainder by 5; the quotient gives the number of the yuga beginning with Nārāyaṇa, and the remainder gives the number of years, etc., pertaining to the yuga.' V. M., then proceeds to name the 12 five-yearly yugas, Viṣṇu (=Nārāyaṇa), Surejya, etc., into which the 60-years cycle is divided. The steps in the process ending with the direction 'divide by 60' give us the number of the 60-years cycles completed as well as the number of the year of the current cycle. It is clear that the year from which, according to this formula, the 60-years cycle must be reckoned is the year 76 A.D,[1] when the first year of the cycle, as also the first year of its first Yuga (Viṣṇu), is held to have started, the year being designated Prabhava. Now, V. M. states (Bṛ. S., 8. 27).

ādyam Dhaniṣṭhāṁśamabhiprapanno Māghe yadā yātyudayaṁ Surejyaḥ
Ṣaṣṭyabdapūrvaḥ Prabhavaḥ sa nāmnā pravartate bhūtahitastadābdaḥ. ||

'When Jupiter rises, in the month of Māgha, having arrived at the first portion of Dhaniṣṭhā, then commences the first year of the 60-years (cycle), by name Prabhava, auspicious to living beings.' Clearly, therefore, the cycle is held to have commenced in 76 A.D., with Jupiter at the beginning of nakṣatra Dhaniṣṭhā, in the month of Māgha. We are at once reminded of the statement in the Paitāmaha Siddhānta discussed above, according to which a five-yearly yuga began in 81 A.D., that is, exactly five years after 76 A.D.—with the Sun and

[1] This may be tested by applying the formula to any proximate year expressed in the Śaka era. Thus, taking the year 10 Śaka, we have $10 \times 11 \times 4 + 8589 = 9029$. Dividing by 3750, the quotient is 2. Adding 2 to 10, we get 12; dividing by 60, we obtain 0 as quotient and 12 as remainder, showing that the first 60-yearly cycle had not passed by, but the year 12 of the cycle was on in 10 Śaka; so that the initial year is 76 A.D.

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moon at the beginning of nakṣatra Dhaniṣṭhā, it being then the month of Māgha. There can thus be no doubt that the 60-years cycle of Jupiter was derived, at some time not earlier than 76 A.D., by combining the 12-yearly cycle of Jupiter (of the mean-sign variety) with the five yearly yuga; so that the five-yearly yuga must have been in current use at least down to 76 A.D. If we could more precisely determine the period at which the 60-years cycle was thus devised, we might thereby determine the date, necessarily later than 81 A.D., at which the yuga continued in use. For this determination we have, unfortunately, no conclusive data but only certain hints which we shall now proceed to combine for a plausible hypothesis.

It will have become apparent that the Jovian years composing the 60-years cycle are not solar years but years of the mean-sign variety, each year commencing when Jupiter enters a *rāśi* ('sign of the Zodiac') with reference to his mean motion and longitude, its duration being about 361·02 days. The use of this variety of the cycle (representing, according to Fleet, its original constitution [1]) is traced back in inscriptional records to a period not much posterior to V. M.; and it still continues in use in Northern India. The South Indian mode of reckoning the Jovian years as equivalent to solar years was of later growth and involved a complete divorce from the movements of Jupiter. Obviously, therefore, the *rāśi*-system had been already introduced when the 60-years cycle was devised. A comparison of the Paitāmaha Siddhānta with the Vāsiṣṭha Siddhānta, as represented in V. M.'s Pañcasiddhāntikā, will help to indicate the period when the *rāśi*-system was adopted. As argued above, the Pait. Sid. after stating (st. 2) that a five-yearly yuga began in Śaka 2 expired, proceeds (st. 3) to set forth rules for calculating the Sun's position *with reference to the nakṣatras*; showing that, even after 81 A.D., the *rāśi*-system had not yet come into vogue. The Vāsiṣṭha Siddhānta however makes use of the *rāśi*-system. That it was appreciably but not very much later than the Paitāmaha Siddhānta follows from the fact that it agrees with the Paitāmaha in assuming an equal daily increase in the length of the day; and it also gives rules of a type distinctly superior to those found in the Paitāmaha. Moreover, the Vāsiṣṭha, unlike the Paitāmaha, treated of the motions of Venus, and probably also of the other planets, as shown by a consideration of chapter 18 of V. M.'s Pañcasiddhāntikā. As Thibaut has left doubtful the point whether the planetary motions as set forth in sts. 1–60 of this chapter are all derived from the Vāsiṣṭha, and as a discussion on the point is likely to throw some light on the period of the Vāsiṣṭha, we proceed to discuss it here.

Chapter XVIII of the Pañca-Siddhāntikā consisting of 81

[1] Art. 'Hindu chronology' in *Encycl. Britt.*, 11th ed.

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stanzas, ends with the statement (in a colophon)—*iti Pauliśa-Siddhānte tārāgrahā nāmāṣṭādaśo'dhyāyaḥ*. Stanzas 1–5 deal with the motions of Venus; and after stanza 5, it is added—

Vāsiṣṭhasiddhānte śukraḥ...

The *prima facie* inference would be that stanzas 1–5 are borrowed from or based upon the Vāsiṣṭha-Siddhānta, the rest being derived from the Pauliśa. This inference is borne out by the fact that, as admitted by Thibaut (*op. cit.*, p. xlviii) there is a difference between the rules concerning Venus as set forth in stanzas 1–5, on the one hand, and the rules concerning the remaining planets as set forth in subsequent stanzas, on the other; namely, that, whereas the latter take into account the equation of the centre, the former fail to do so. Thibaut attempts to explain away this difference by assuming that it 'may simply be due to the circumstance that the equation of the centre of Venus, being very much smaller than that of the other planets, was disregarded on purpose'. Against this, we must note, firstly, that the order in which the planets are treated in stanzas 1–60 is: Venus, Jupiter, Saturn, Mars, Mercury, while the order of treatment in stanzas 66–81 is: Mars, Mercury, Jupiter, Venus, and Saturn, which is also the order adopted by V. M. in his Bṛhat Saṁhitā; and secondly, that the colophon: *Vāsiṣṭhasiddhānte Śukraḥ* appears not after stanzas 1–60 but after stanza 5, closing the discussion on Śukra. If stanzas 1–60 had formed one single whole, cited from the Vāsiṣṭha, the order of treatment of the planets would most likely be in conformity with the order followed by V. M., not only at the end of this chapter, but also in his Bṛ. S.; and the colophon: *Vāsiṣṭhasiddhānte*, etc., would have appeared after stanzas 1–60. Indeed the form of the colophon: *Vāsiṣṭhasiddhānte Śukraḥ* shows that the motions of Venus alone are considered to have been taken from the Vāsiṣṭha Siddhānta. Regarding the rest of the chapter, the position seems to be somewhat as follows:—

Stanzas 6–60 treat of the motions of Jupiter, Saturn, Mars, and Mercury. Stanzas 66–81 also treat of motions of these four planets and Venus. Of the intermediate stanzas, numbered 61 to 66 in the MSS., those numbered 61, 63, and 65 mention V. M. by name and praise him, and that numbered 62 contrasts his performance with that of two other writers, Pradyumna and Vijayanandin. That the position of those stanzas is anomalous has been observed by Thibaut who is inclined to look upon them as 'concluding stanzas of the whole work' (p. xlvi). But it may be questioned if V. M. himself was the author of all these stanzas. In the first place, V. M. begins his treatise, the Pañcasid, by speaking in the first person; he could hardly consistently name himself in the third person at the conclusion. In the Bṛhat Saṁhitā also

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V. M. speaks of himself in the first person. On this ground alone, stanzas 61, 63, and 65 should be deemed not to be concluding stanzas of the Pañcasiddhāntikā. Secondly, the wording of stanza 61 is against the view that V. M. was its author:

Āvantyakaḥ samāsācchiṣyahitārthaṁ tataḥ sphuṭāṅkasamam. | cakre Varāhamiharas Tārāgrahakārikātantram || (61).

The use of the remote past (*lit*) in the form *cakre* is probably significant, and the appearance of the word *kārikā* in the designation *Tārāgrahakārikātantram* seems likewise to denote a species of composition different from the Pañcasiddhāntikā. Thirdly a comparison of stanza 64 with the concluding chapter of the Bṛ. S., indicates that the stanza is probably an adaptation from the Bṛ. S. We shall quote them side by side:—

Bṛhat Saṁhitā, 106.	*Pañcasiddhāntikā, 18.*
jyotiḥśāstrasamudram pramathya matimandarādriṇātha mayā |	
lokasyālokakaraḥ śāstreśaśāṅkaḥ samutkṣiptaḥ || (1)	
pūrvācāryagranthāḥ notsṛṣṭāḥ kurvatā mayā śāstram |	prastāve'pi na doṣān jānannapi vakti yaḥ parokṣasya |
tānavalokyedañca prayatadhvaṁ kāmataḥ sujanāḥ || (2).	
athavā bhṛśamapi sujanaḥ prathayati doṣārṇavād guṇaṁ dṛṣṭvā |	prathayati guṇāṁśca tasmai sujanāya namaḥ parahitāya || (64).
nīcastadviparītaḥ prakṛtir iyaṁ sādhvasādhunām || (3).	

In the Br. S., V. M. first states that he had composed that treatise by churning the ocean of older astronomical treatises; and pleads that as he has not neglected the works of previous authoritative writers (*pūrvācāryāḥ*), good men (*sujanāḥ*) should, after seeing those as well as this, freely (*kāmataḥ*) study (what appears to be the best). He then expresses the belief that good men, if they see merit (*guṇa*) in an ocean of demerit (*doṣa*), greatly praise (*prathayati*) the merit, while the opposite is done by the mean: such is the nature of the good and such the nature of the bad. Here the readers, assumed to be good men (*sujanāḥ*), are requested to see for themselves the Br. S., as well as the earlier works and freely make their choice regarding what is worthy of study. The author has no doubt that the readers, being good men (*sujanāḥ*), will praise what is meritorious. The stanza of the Pañca-Sid., on the other hand, says:

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'Obeisance to him, the good (*sujanāya*) and the benevolent, who praises (*prathayati*) merits (*guṇān*) and does not speak of the demerits of (a person or authority who is) out of sight, even though he happens to know the demerits and an opportunity (to speak of those demerits) occurs.'

Here, V. M. is himself conceived of as the *sujana*. We discern here the tone of an admiring disciple of V. M., a disciple who, taking his cue from the Br. S., seeks to ascribe to his master the goodness which the master evaluates there with reference to his (the master's) prospective readers. The fact that obeisance is actually made here to V. M. is proof positive that the verse cannot be his own.

There remains for our consideration st. 62.

> Pradyumnabhūmitanaye jīve saure'tha Vijayanandikṛte |
> budhe ca bhagnotsāhaḥ prasphuṭam idaṁ karaṇaṁ bhajatām || (62).

'Let him who is discouraged by (the theory of) Mars (as formulated) by Pradyumna, and likewise by (the theory of) Jupiter and Saturn, and by (the theory of) Mercury, resort to this very accurate manual (*karaṇa*).' (For the definition of a *karaṇa*, see Thibaut in *J.A.S.B.*, 1884, p. 261.)

This verse, apparently, is not open to the objections urged above. It seems to be genuine; but, if so, its position should be just after stanza 60, and just before stanza 61. As however it comes after stanza 61, in our MSS., it may appear to belong to the ungenuine group of verses introduced with stanza 61. Its contents, on the other hand, connect themselves with the preceding stanzas (6–60) in a peculiar way: Those stanzas, as already remarked, are concerned with the motions of Jupiter, Saturn, Mars, and Mercury; the treatment of Venus having been completed with stanza 6 against which the colophon appears—*Vāsiṣṭhasiddānte sukraḥ*. Now this stanza 62 mentions two authorities, Pradyumna in connexion with Mars, and Vijayanandin in connexion with Jupiter and Saturn and probably also with Mercury, leaving aside Venus. Evidently therefore, Pradyumna had written about Mars, and Vijayanandin about Jupiter and Saturn and probably, Mercury; but what they had written lacked accuracy, and that is why a *karaṇa* or manual setting forth reliable rules had to be composed. The question arises: what precisely is the *karaṇa* referred to here? Does it refer to the rules which follow (viz. stanzas 65–81) or to the rules which precede the verse under consideration (viz. stanzas 6–60)? Or, does it refer to the entire work, the Pañcasiddhāntikā? That the third is the best alternative seems to follow from V. M.'s remark in chapter 1 of his Br. S., to the effect that, in his previously composed *karaṇa*, he had treated of the rising, setting, retrograde motions, etc., of the planets.

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The *karaṇa* spoken of here is obviously the Pañcasiddh, as understood also by the commentators. If, therefore, the *karaṇa* referred to in stanza 62, be the entire work known as the Pañcasiddhāntikā, the stanza should be deemed to form the concluding verse of that work. By placing it after st. 60, we can perceive a natural nuance of sense, for stanza 60 runs :—

jñasitārejyārkonāḥ śaśinaḥ pratyuttaraṁ khagāmśena |
jñātvaivaṁ vikṣepād ādeśam anāgataṁ kuryāt || (60).

'Mercury, Venus, Mars, Jupiter (and Saturn ?) (become visible in the East) when they are less advanced in longitude than the Sun by the amount of the planetary degrees (as calculated above) ; in the moon's case the reverse takes place. Having thus ascertained (all requisite items) from the latitude, the astronomer may make declarations regarding future planetary occurrences.' (Thibaut.)

The true nature of stanzas 65–81 will now be manifest. Thibaut has already remarked on the extraordinary character of the rules contained therein : they are not only supplementary but also unique and out of harmony with the data of Hindu astronomy. It cannot even be urged, in favour of their genuineness, that the MSS. here are faulty ; for, as Thibaut has pointed out (p. xlvii), the MSS. just at this place are fairly correct and appear to call for no immediate incisive emendations. From what we have seen regarding the stanzas (61, 63, 64, 65) adumbrating these rules, they may with confidence be set down as l a t e r i n t e r p o l a t i o n s. As a matter of fact, the *karaṇa* known as the Pañca-Siddhāntikā came to an end with stanzas 60 and 62, and the rules regarding planetary motions given in the preceding verses left no room for a further discussion of the same topic in the original scheme.

The foregoing considerations tend to show that we should regard the last chapter of our MSS. of the Pañca-Siddh. as consisting, *firstly*, of stanzas 1–5 dealing with Venus, ascribed in the colophon to the Vāsiṣṭha ; *secondly*, of stanzas 6–59 dealing with Jupiter, Saturn, Mars, and Mercury ; *thirdly*, of stanzas 60 and 62, by way of summarising and supplementing the rules set forth in the treatise regarding not only the above planets but also the moon, and of bringing the treatise to an end with a mention of Pradyumna as having written on Mars, and of Vijayanandin as having written on Jupiter, Saturn and Mercury ; *fourthly*, of stanzas 61, 63, 64, and 65 as adumbrating the *Tārāgraha-Kārikātantram* represented by the body of rules which constitute the *fifth* group (stanzas 66–81) in the chapter. The *second* group of stanzas (6–59) thus appears to have been related to the works of Pradyumna and Vijayanandin, as distinguished from the *first* group consisting of stanzas 1–5 which the colophon declares to be based upon the Vāsiṣṭha. Of Pradyumna we have no independent collateral information, Pradyumna as

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an astronomical writer being barely mentioned by Alberuni.[1] A Vijayanandin also is alluded to by Alberuni[2] as the author of *Karaṇa-tilaka*; but, as a rule ascribed to him directs us to deduct 888 from the Śaka-kāla for finding the ahargaṇa, this Vijayanandin cannot be the one referred to by V. M., unless of course we are prepared to show that stanza 62 of the Pañca-Siddh. is also an interpolation of such a late age. The Brahma-Sphuṭa Siddhānta, however, mentions a Pradyumna and a Vijayanandin who may with reason be identified with the Pradyumna and the Vijayanandin of our stanza. The mention occurs in a passage, discussed by Thibaut (*op. cit.*, pp. xxvi, xxxix), which seems to state that Śriṣeṇa, by piecing together data found in various authorities, composed a very heterogeneous treatise, the Romaka Siddhānta (which however differed from the Romaka S. used by V. M.).

> Śrīṣeṇa Viṣṇucandra Pradyumnāryabhaṭa-Lālasiṁhānāṁ
> grahaṇādivisaṁvādāt pratidivasaṁ siddham ajñatvam.
> yugayātavarṣe bhagaṇān Vāsiṣṭhān Vijayanandīkṛtapādān
> . . . . . .
> Śrīṣeṇena gṛhītvā . . . . . .

'The ignorance of Śrīṣeṇa, Viṣṇucandra, Pradyumna, Āryabhaṭa, and Lālasiṁha is daily proved by their false assertions regarding eclipses, etc. . . . . . By Śrīṣeṇa who adopted the elapsed years and the revolutions of the yuga pertaining to Vāsiṣṭha as made a basis of by Vijayanandin . . . . . .' Pradyumna, apparently, had written on eclipses; and Vijayanandin, apparently, had effected a recast of the Vāsiṣṭha so far as the number of elapsed years and the revolutions of the yuga were concerned, already before Śrīṣeṇa. There was another recast of the Vās. by Viṣṇucandra, as the concluding line of the same passage informs us; but we know nothing about its contents. Thibaut has remarked that the word p a d a, in the sense of a 'remainder' that is made a basis for further calculation, is characteristic not only of chapters II and III but also of the stanzas in the earlier portion of chapter XVIII relating to Jupiter, Saturn, etc.,—a fact which to him 'appears to strengthen the conclusion that that whole part (stanzas 1–60) epitomizes the doctrines of Vāsiṣṭha.' But it should be remembered that the word *pada* in chapter XVIII occurs only in connexion with Jupiter and Saturn, and not in connexion with the other planets. Consequently, if its use be considered peculiar to Vās., we should infer that the verses relating to Jupiter and Saturn only 'epitomize the doctrines of the Vāsiṣṭha.' Indeed, the absence of the expression from the

[1] *India* (Sachau, Trübner's Or. Series), I, p. 158.
[2] *ibid.*, II, pp. 49-50.

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verses relating to Venus and Mercury might lead us to suppose, on Thibaut's theory, that they are taken from a source different from the Vāsiṣṭha. The fact is, as admitted by Thibaut, that the use of the word *pada* in this sense is not peculiar to Vās.; it occurs not only in the Vāsiṣṭha (Ch. II) but also in the Pauliśa (Ch. III). Here, the final colophon *iti Pauliśa-Siddhānte tārāgrahā* . . . . indicates the source. Indeed, what prevented Thibaut from accepting this indication was that it would conflict with his view that stanzas 66–81 are referred to by the colophon (p. xlviii). He however recognised that, were it not for what he thus took to be 'a direct assertion made in the colophon (of the Pauliśa being the source of the rules contained in stanzas 66–81), nobody I suppose would be inclined to trace the determination of periods given in it to a Siddhānta which seems to have been specially dependent on Greek teaching.' The real character of these stanzas (66–81) being as analysed above, we need feel little hesitation in affiliating the colophon—*Pauliśa-siddhānte tārāgrahā* . . . .—to stanza 62 which is the final stanza in chapter XVIII of the Pañca-Siddh. and closes that treatise. It thus becomes clear that the colophon *Vāsiṣṭhasiddhānte śukraḥ* belongs to stanzas 1–5 dealing with Venus, while the colophon *Pauliśasiddhānte tārāgrahā* . . . . belongs to stanzas 6–62 (excluding 61) dealing with Jupiter, Saturn, Mars, and Mercury. The occurrence of *pada* in connexion with Jupiter and Saturn, but not in connexion with Mars and Mercury, shows nothing more than that the Pauliśa, in framing these rules intended for easy practical application, did not feel called upon to adhere to any peculiar terminology. Nor need we be at a loss to explain why the motions of Venus are given not according to the Pauliśa but expressly according to the Vās.; the reason is that, in the case of Venus, owing to the small eccentricity of its orbit, the equation of its apsis could well be neglected, so that the Vās. rule would be as serviceable as any other.

It is thus clear that in Chapter XVIII, the rules regarding Venus alone should be deemed to have been derived from the Vāsiṣṭha. As stated already, these rules fail to take into account the equation of the centre; they depend wholly on the equation of the conjunction. This circumstance seems to warrant an inference regarding the Vāsiṣṭha's relationship to Ptolemy. Thibaut has pointed out (*op. cit.*, p. lii) that the two inequalities were first separated by Ptolemy; and, consequently, Hindu astronomical works (e.g. the Sūryya Siddhānta) in which the anomaly of the apsis and the anomaly of the conjunction are clearly distinguished are later than Ptolemy, from whom alone, directly or indirectly, they could have derived their theory.' It follows that every Hindu astronomical work treating of planetary motions without taking account of the two separate inequalities should be dated prior to its

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author's knowledge of Ptolemy. Nevertheless, Thibaut imagines (*op. cit.*, p. xlviii) that 'the equation of the centre of Venus, being very much smaller than that of the other planets, was disregarded on purpose'. Admitting such a possibility in the case of Venus, we cannot imagine that any astronomer acquainted with the equation of the centre would 'disregard on purpose' that equation in the case of the other planets. Now, the Vāsiṣṭha, as urged by Thibaut (*ibid.*, p. xlvii), must have possessed a knowledge of the revolutions not only of Venus but of other planets as well. Why, then, does V. M., cite from it rules relating to the motions of Venus alone? Obviously, the rules given in the Vās. regarding the motions of planets other than Venus were found to be so rough, owing to its failure to take account of the two planetary inequalities, that their adoption would introduce flagrant discrepancies between calculation and observation which it was V. M.'s special care to avoid, particularly in this chapter treating of the true courses of the planets. The Vās. was apparently unaware of the two separate inequalities; there is no likelihood of its having deliberately discarded this knowledge.

When precisely this knowledge reached the shores of India, cannot be determined, on the available data. The rules given in Chapter II of the Pañca. S., on the authority of the Vās., show that the Vās. was composed from the standpoint of Avanti or Ujjayinī, a city with which Græco-Roman trade is well attested for the period of Ptolemy. It would *a priori* appear therefore that no considerable interval need be assumed to have elapsed between the publication of Ptolemy's astronomical treatise and the transmission of its contents to Ujjayinī. We must remember however that Ptolemy's knowledge of Ujjayinī was itself out of date: he mentions Caṣṭana (Tiastanes) as the only ruler at Ujjayinī (Ozene) whereas the Andhau inscription shows that, already in 130 A.D., Caṣṭana was ruling jointly with his grandson Rudradāman who, moreover, appears from his Girnār inscription to have already become the sole ruler in 150 A.D.[1] In fact, Ptolemy drew his materials largely from Marinos of Tyre who flourished about a generation earlier than Ptolemy. If, then, with all the Græco-Indian trade relations subsisting at this epoch, Ptolemy himself could find it necessary to be a little out of date regarding his knowledge of Ujjayinī, we cannot fairly assume that a knowledge of his astronomical work was transmitted to Ujjayinī immediately after its publication.

We may conclude therefore that the Paitāmaha S., as represented in V. M., was composed after 86 A.D., and that the

[1] *Zeits. f. Ind. u. Iran.*, 1922, p. 255. The joint-rule explanation is due to Dr. R. C. Majumdar; see *Ind. Ant.*, 1918.

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Vāsiṣṭha known to V. M. was composed later still but before a knowledge of Ptolemy's astronomical treatise reached Ujjayinī. As however the Vās., employs the *rāśi*-system for Solar motion in place of the nakṣatra-system employed in the Pait., it would seem that the rāśi-system was introduced into India, at some date later than 86 A.D., but before a knowledge of Ptolemy's Syntaxis reached her shores. It follows that the 12-yearly cycle of Jupiter of the mean-sign variety, involving an application of the rāśi-subdivision of the ecliptic to Jupiter's motion was devised appreciably later than 86 A.D.; and the 60-yearly cycle of Jupiter, based upon a combination of this 12-yearly cycle with the five-yearly Yuga, was devised later still. The five-yearly Yuga was thus in vogue considerably later than 86 A.D.

The principle underlying the five-yearly Yuga is, as I stated at the outset, that 1,830 days are equated with five solar years, with 62 lunar months (synodic revolutions of the moon), with 67 nakṣatra months (sidereal revolutions of the moon). The scheme of the Paitām. S. agrees with that found in the Jyot. Ved., and in the Kauṭ. Artha-Ś.; the Yuga being made to commence with Māgha *śukla* 1, with the moon (and the sun) at the beginning of the nakṣatra Dhaniṣṭhā., this being the moment of the Winter Solstice. A different starting point is provided in the Jaina Sūrya Prajñapti, viz. Śrāvaṇa *kṛṣṇa* 1, with the moon at the beginning of nakṣatra Abhijit (the Sun consequently being in Puṣyā), this being the moment of the Summer Solstice.[1] Another feature distinguishes the exposition of the Yuga in the Sūrya Prajñapti from that in the Jy. V., Pait S., and Kaut. A.-Ś; whereas in these latter works, only 27 nakṣatras of equal extent are adopted, 28 nakṣatras (formed by the addition of Abhijit) of unequal extent are employed in the former. The date of the Sūrya Prajñapti is unknown. But it doubtless belongs to a period anterior to the introduction of Greek astronomy. And, although, it is a distinctively Jaina work, it is not impossible that the scheme of the Yuga as worked out therein was made the basis of a calendar current amongst astronomers in the early centuries of the Christian era.

It will be observed that the Yuga contains 62 lunar months distributed among five solar years. The mode of distribution involves the intercalation of two months. According to the Kaut. A.-Ś.,[2] the Yuga begins with the month Māgha, the first

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[1] *J.A.S.B.*, 1880, pp. 107–127, 181–206.

[2] divasasya haratyarkaḥ saṣṭibhāgam ṛtau tataḥ
karotyekamahas'chedam tathaivaikaṁ tu candramāḥ
evam ardhatṛtīyānāmabdānām adhimāsakam
grīṣme janayataḥ pūrvam pañcābdānte tu paścimam.

The passage occurs in 'Jyotiṣa' as quoted in Śabdakalpadruma, *s.v. Malamāsa.*

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intercalary month comes in the *grīṣma* season after the 30th lunar month, i.e. after Āṣāḍha and would hence be properly called 'the second Āṣāḍha'; while the second intercalary month comes at the close of the five-yearly period, i.e. after Pauṣa, and would hence be properly called 'the second Pauṣa'. According to the S. P., the Yuga beginning with the month Śrāvaṇa, the first intercalary month would similarly come after the 30th lunar month from Śrāvaṇa, i.e. after Pauṣa and would be fitly termed 'the second Pauṣa', while the second intercalary month at the end of the Yuga, i.e. after Āṣāḍha would be fitly termed 'the second Āṣāḍha'. Thus, in both schemes, the only intercalary months are Āṣāḍha and Pauṣa.[1]

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[1] Cf. Thibaut in *J.A.S.B.*, 1880, p 112-3. The method of intercalation is not actually set forth in detail in the S.P. but is inferred to have been as stated here on the evidence of the Kauṭilīya. Cf. Fleet in J.R.A.S., 1912, pp. 704-5.

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Modern Tibetan Phonetics.

With special reference to the Dialect of Central Tibet.

By Georges de Roerich.

The vast elevated country of Tibet is intersected into numerous deep valleys, separated from each other by mighty mountain ranges sometimes difficult of access. The forbidding character of the country, its bleak uplands of the north, bare wind-swept mountain sides, and mighty snow ranges, witnesses of centuries of evolution, made a lasting and powerful imprint on the hillmen of Tibet, their culture and language. The region between the upper course of the Yangtse and the Huang ho in North-West China is said to have been the original home of the Tibeto-Chinese race. The forefathers of modern Tibetans invaded the country from the North-East. The high table-lands of Koko-nor (about 10,000 ft.), and the surrounding mountain country afforded sufficient grazing for the moving hordes, and their cattle. It is from this gigantic 'place d'armes' that the hordes of ancient Tibetans, displaced by some other mighty human avalanche, had been forced to seek new pasture grounds, descending the river valleys of Eastern Tibet into Khams and the South-Eastern corner of the country. Eastern Tibet is a highly intersected mountain country, and affords but little opportunity for cattle-breeding and nomad life in general. The character of the country forced the raw nomads to take up agriculture, and to settle along the fertile river valleys. From here some of the newcomers moved up the stream of the Brahmaputra, and settled in the fertile loess-covered valleys of Central Tibet, such as the Kyi-chu, Nyang-chu, and the Yalung.

Another body of the invaders moving from the Koko-nor region across the northern uplands, struck the mighty barrier of the Nyen-chen Thang La, and was forced to turn westwards along the northern slopes of the Transhimālayas south of the Great Lakes, searching for an easy passage across the mountains into the basin of the Tsang-po or Brahmaputra. The great pilgrim route from Nag-chu and Nam-ru to the Kailāsa mountains probably represents an ancient migration route. I hope to discuss in a separate article the question of this route, and the curious megalithic monuments that are found all along its length.

The valleys suited for cultivation in Central and Southern Tibet, and some of the fertile wooded valleys in the south-east of the country, have been the birth-places of Tibetan culture.

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Here a population of sedentary tribes created the theocratic culture of Tibet, moulded from the rich heritage of cultural achievements inherited from China, and India. Here also the pious efforts of many of the translators of sacred scriptures of Buddhism, gave a definite form to the written idiom of Tibet, which still remains the Latin of Buddhist Central Asia. The tribes, who populated these valleys, through many of which flow the mightiest streams of Asia, speak a variety of dialects sprung from a common root represented by the vast treasury of the written language codified for posterity by the remarkable efforts of a band of Indian and native scholars. This stupendous work started in the second half of the VIIth century A.D. has been crowned with full success, for it succeeded in creating from the raw speech of the nomads a written idiom subtle enough to render the abstruse concepts of Buddhist thought. The difficulties of intercommunication between the different valleys, and the absence of any levelling influence on the many local dialects, which could be exercised by a powerful seat of civilization, produced the great diversity of spoken idioms. The written language into which the Buddhist Canon has been translated, Tibetan in words, and Sanskrit in syntax, has always been a heritage of the literary class. The popular language continued to develop on national lines, creating a written language of its own, widely different from the language of the Känǰür and Tänǰür.

The deep cut valleys of Central and South-Eastern Tibet border on the north and north-east on a large belt of elevated pasture lands or "ḍok" which stretches itself across the whole of northern Tibet from the Kansu border to the frontiers of Ladak in the west. Here a scanty population of nomad tribes the Nya-rong was, the Go-logs, Pa-nags, the Hor-pas, and Chang-pas, have preserved the archaic forms of Tibetan speech. The wind and gale-swept dreary uplands, with their scanty nomad encampments of lugubrious black felt tents still preserve the atmosphere of an early migratory age. A thorough study of these tribes from the point of view of ethnology, archaeology, and linguistics, would undoubtedly reveal a good many important data, and complete the picture of early migrations in Innermost Asia.

It is difficult to speak at present about the evolution of Tibetan dialects, because of an almost complete absence of monographic studies of single dialects. The isolated state of the country, and the century-old policy of excluding all foreigners, prevented the linguist from entering the country, and to study and record its living forms of speech. Such great work in studying spoken dialects of China, and reconstructing the phonetic structure of ancient Chinese, as performed by such masters as Pelliot, Karlgren, and H. Maspero, and the recording and description of modern Mongal dialects performed by such scholars

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as Rudnev, Ramstedt, and Vladimircov, is lacking almost completely in the domain of Tibetan Philology. The study of Tibetan was made necessary by the almost complete absence of Sanskrit originals of Buddhist scriptures, and all efforts were directed to the study of the written language. This phase of study has been brilliantly inaugurated by the self-denying work of the great Hungarian scholar, Alexander Csoma de Körös, the greatest name on the Tibetan path. The study of modern idioms remained in oblivion until the second half of the last century, when appeared the meritorious efforts of the Rev. Jäschke, embodied in the introduction to his Tibetan-English Dictionary, and in several articles published in the Journal of the Asiatic Society of Bengal, and the Zeitschrift d. Deutschen Morgenländischen Gesellschaft, and the pioneer work of the late Professor August Conrady on the Comparative Grammar of the Indo-Chinese Family of Languages. Since the beginning of this century learned articles by Dr. A. H. Francke, of the Moravian Mission, on the dialects of Ladak, and Tibetan phonetics in general, the suggestive articles of Dr. B. Laufer, always full of precious documentation, on the phonetic structure of ancient Tibetan (IXth A.D.), and numerous grammars of spoken Tibetan, among which the Grammar of Colloquial Tibetan by Sir Charles Bell (Calcutta, 1919), and the "Tibetan Manual" by Henderson stand foremost, have touched to some extent the virgin field of Modern Tibetan phonetics. The monumental Linguistic Survey of India by Sir George Grierson contains in Vol. III, Part 1, descriptions of phonetic and morphological structure of various western and southern Tibetan dialects, including the Central Tibetan, and even a brief sketch of the Khams dialect.

Monographical studies of the principal dialects, such as the Lhasa dialect, which presents the greatest number of difficulties to the ear of the student, the Khams dialect, the Amdo dialect, and one of the archaic nomad dialects, should be laid at the foundation of a Linguistic Survey of Tibet. Naturally the time when such a work could be adequately fulfilled is still far off, and we have to satisfy ourselves with the existing meagre evidence furnished by the accounts of different travellers who explored the country. Only on the completion of such monographic studies, shall we be able to draw conclusions about the ancient state of the language.

My recent stay in Tibet, and continuous intercourse with Tibetans from various parts of the country for the past five years, gave me ample opportunity to study the spoken idiom of modern Tibetan. I propose here to make a brief sketch of the phonetic structure of modern Tibetan as spoken in the Central Provinces of Ü and Tsang, making some references to the phonetic structure of ancient Tibetan (the language of the

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VIIth and IXth centuries A.D. attested by native grammarians), and the peculiarities of local pronunciations in different dialects.

The whole country can be conveniently divided into five linguistic areas:—

I.—Dialects of Western Tibet. (Ladakī, Lahul, and the archaic dialects of Baltistān and Purig). The so called སྟོད་སྐད, Tö-ke is the dialect of the སྟོད་མངའ་རིས་སྐོར་གསུམ Tö Ṅa-ri Kor-sum Province, and represents an interconnecting link between the dialects of the far west, and those of the Central Provinces of Tibet Proper.

This western group of dialects is by far the best known, except for the dialect of Tö.

II.—Dialects of Central Tibet. (The Lhasa dialect or དབུས་སྐད, Ü-ke, with a sub-dialect spoken in the valley of the Pon-chu, and the Tsang dialect) The Lhasa dialect has been described in numerous grammars of which the best are by Sir Charles Bell, and Mr. Henderson. The Tsang dialect is still little known, although a good many Europeans have lately visited Tashi-lhunpo and the Province. The differences between the Ü dialect and the Tsang dialect is more in vocabulary, than in phonetics. The Tsang dialect is richer in literary expressions. Ex. the pronoun བདག, bdag, pronounced 'dak' is commonly used in the Tsang dialect, whereas in the Ü dialect ང་, ŋa is used instead of it. The Tsang dialect uses འུ་ཅག, 'u-čag for the Lhasa ང་ཚོ, ŋa-ʦho, pronounced ŋaṇ-ʦʰo "we".

III.—Dialects of Southern Tibet. (The dialect of To-mo or Chumbi Valley, and the various Himālayan dialects of Tibetan stock).

The group of dialects has been described in the Linguistic Survey of India, Vol. III, Part 1.

IV.—Dialects of Eastern and South-Eastern Tibet. (The dialect of Khams / the region round Chamdo /, the dialect of Amdo-Derge, and dialects of Kong-po, Po-yul, and the ʦha-rong).

The dialects belonging to this group are almost completely unknown. In Vol. III, Part 1, of the Linguistic Survey of India is found a brief sketch of the Khams dialect. Rev. Jäschke in the phonetic table appended to the Introduction of his Tibetan-English Dictionary has given the pronunciations of an Eastern Tibetan dialect without specifying it. W. Rockhill in his "The Land of the Lamas" (New York, 1891) has

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given a short phonetic table of different pronunciations according to Eastern and Central Tibetan dialects. (Amdo, Pa-nag, Li-thang and Ts̈ha-rong). The Dictionaire Tibétain-Latin-Français by Roman Catholic missionaries published in 1899 at Hongkong contains a number of words and expressions used in these dialects.

V.—The archaic nomad dialects, consisting of the dialect of Nya-rong, the dialect of Go-log with the sub-dialects of the Pa-nags, the dialect of the Hor-pas, and the dialect of the Chang-pas, the northerners, spoken in the vast region from Nam-ru in the north-east to far into the Tö Ṇa-ri Kor-sum Province where it imperceptibly merges into the dialect of Tŏ. The Hor dialect or Hor-ke can be divided into two sub-dialects, the sub-dialect of the Hor-pas north of the Thang La Range, and the sub-dialect of the Hor-pas south of the Thang La, (the five tribes of Ts̈e-mar, Atak-Thomi, Atak-Memar, Kömora, and Páòro). This last one is strongly tinted by the Central Tibetan dialect. The Hor dialect preserved the pronunciation of certain prefixes, the voiced pronunciation of ancient voiced, and even the voiced pronunciation of some of the unvoiced. All the nomad dialects have as their common characteristic the pronunciation of certain prefixes. The treatment of these prefixes varies according to dialects: ཟློག་, zlog: Nya-rong and Go-log: zăˊ-log; Hor: z^{a}-log; Po-yul and Kong-po: ḍok; Lh. ḍo^{k} (But in ལམ་ཟློག་ lam-zlog, pronounced lam-lok, "wrong ways" or "heretical doctrines.")

ཟླ་བ་, Nya-rong and Go-log: zăˊ-la-wa; la-wa; za-wa; Hor, of Thang La: za-wa; Hor of Nag-chu-ka: ḍa-wa; Po-yul and Kong-po: ḍa-wa; Khams; ḍa-wa; Lhasa: ḍa-wa, "month."

རྫོགས་, rǰogs, "finished", Pa-nag and Go-log: rǰog, Lhasa: ǰo^{k}.

འགྲོ་བ་, ('gro-ba) to go; Pa-nag: ǰ^{r}o-wa; Hor: ḍo-wa; Lhasa: ḍo-wa.

དུས་, "ṭime", Pa-nag and Go-log: dū; Hor: dū; Lhasa: tü.

གཞན་པ་, gšan-pa, "another," Pa-nag and Go-log: žan-pa; Hor: žem-pa; Lhasa: šem-pa and šē-pa. (A peculiarity of the Pa-nag dialect is the aspirate pronunciation of the initial དཔ་, dp–. Ex. དཔུང་, dpuṅ, "army," Pa-nag: huŋ; Hor: puŋ; Lhasa: puŋ.

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དཔལ, dpal, "glory", Pa-nag : ĥal : Hor ; pal ; Lhasa : pē.

A glance at this table of Tibetan Linguistic Areas will suffice to show that the most archaic dialects are found on the outer border of the country in distant mountain valleys, or on uplands difficult of access, and distant from any important and frequented trade-route. It is well known that the Lhasa dialect is the most important dialect of the country. It is the language of the only densely populated district of Tibet, the language of the capital, the language of Tibetan officialdom, and the every day idiom of the learned class. It is understood almost everywhere in Tibet, and in some places even supersedes the local dialects. Should the Lhasa Government have succeeded in establishing a strong grip over the country, the Lhasa dialect would have undoubtedly become the language of the whole country. It is the most evolved dialect of all the Tibetan dialects rapidly moving to a state of things when the tone and position in a sentence will determine the meaning of words. Throughout the present paper the dialect is referred to as Modern Central Tibetan.

The dialect has six fundamental characteristics :—

(1) The loss of all prefixes and suffixes.

(2) The palatalization of vowels and consonants.

(3) The change of all voiced consonants into unvoiced of corresponding class, and the preservation of voiced after prefixes.

(4) The loss of final dental nasal, and the nasalization of the preceding vowel.

(5) The simplifying of compound consonants changing them into domal dentals, and palatal affricates.

(6) The important part played by the tone or acoustic pitch.

I shall describe the phonetic peculiarities of the Modern Central Tibetan under the above six headings.

The table of sounds of the modern Tibetan is as follows: It will be noticed, that the number of letters in the alphabet, reproducing the language of the VII–IXth century A.D., does not correspond to the number of actually existing sounds in Modern Central Tibetan :

ཨ, 'a' is a low-back-wide vowel as in the Italian word "padre."

According to native Tibetan Grammarians there is no separate sound 'a,' it being inherent in each of the sounds of the Tibetan alphabet.

ā, a corresponding long.

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ེ, 'e' is a high-mid-front vowel. ē corresponding long.

ོ, 'o' is a mid-back-wide-round.

ི, 'i' is a high front vowel.

ུ, 'u' is a high-back-wide-round vowel; ū is the corresponding long. Palatalized vowels: æ, English "man," ö, ö, ü (I.P.A y /high front vowel, pronounced like German ü/). Corresponding long vowels: ǣ, ō̈, ṻ. Nasalized vowels: æ̃, ẽ, õ̃, ũ̃, ĩ. Note that in Modern Central Tibetan all nasalized vowels are long.

There exist also in some of the archaic nomad dialects short or irrational vowels, written by me ᵃ and ᵉ, which are found after pronounced prefixes, and sometimes at the end of words.

Diphthongs: eⁱ, öⁱ, üⁱ, the second element of the diphthong is always short, and the first element is palatalized, except 'e.'

The Modern Central Tibetan possesses the following consonants. The vowel 'a' is said to be inherent in every consonant:—

ཀ, k unvoiced velar. Ex. ཀུན་དུ, kun-tu, "all", pronounced kṳ̃-tu—, kũn-tu.

k—The same softened before 'e' and 'i.'

ཁ, kʰ, the same slightly aspirated. Ex. ཁྱད, khyad, "difference," pronounced kʰʸe.

kh, the same aspirated strongly. Ex. ཁོང་, khong, "he," pronounced khoŋ.

ག, g voiced velar. Ex. དགུ, dgu, "nine," pronounced gu.

g, the same softened before the vowels 'e' and 'i.' Ex. གིས, gis, particle of the instrumental case, pronounced gī.

ད, t, unvoiced inter-dental.

ཐ, tʰ, the same slightly aspirated. Ex. ཐར་བ, tharba, "to be saved," tʰar-wa.

th, the same aspirated strongly. Ex. མཐོང་བ, mthong-

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ba, "to see," pronounced thoŋ-wa.
ṭ unvoiced domal.* ṭʰ the same slightly aspirated.

ད, d inter-dental voiced.

ḍ indistinct voiced dental, found after prefixes. Ex. འདོད་པ, 'doel-pa, pronounced ḍō-pa.

ḍ voiced domal. Ex. ཟླ་བ, zla-ba, "month", pronounced ḍa-wa.

ཅ, č affricate front-palatal unvoiced.

ཆ, čʰ the same slightly aspirated. Ex. ཆུ, čhu, "water", pronounced čʰu.

ཇ, ǰ palatal affricate voiced (I.P.A. ʤ) Ex. མཇལ་བ, mǰal-ba, "to meet", pronounced ǰē-wa.

ཙ, ʦ unvoiced dental affricate. Ex. རྩི་བ, rʦi-ba, "to count", pronounced ʦi-wa.

ཚ, ʦʰ(a) the same slightly aspirated. Ex. མཚན, mʦhan, "name, sign", pronounced ʦʰæ̃.

ʦh, the same aspirated strongly. Ex. ཚྭ, ʦhva, salt, pronounced ʦhā.

ཛ, ʣ voiced dental corresponding to ʦ. Somewhat like the Russian naʣór. Ex. འཛིང་རུ, 'ʣing-ra, "stone-wall," pronounced ʣiŋ-ra.

པ, p unvoiced bilabial.

ཕ, pʰ the same slightly aspirated. Ex. ཕུར་བུ, phur-bu, "magic dagger", pronounced pʰur-bu.

ph the same aspirated strongly. Ex. ཕུང་པོ, phung-po, "skandha", pronounced phuŋ-po.

* It will be noticed that I use "domal" for cerebral. I do in accordance to the suggestion put forward by Professor Ch. R. Lanman in his illuminating article "Sanskrit mutes called mūrdhaŋya that is domal", Festgabe Kaegi, Zurich, 1919, pp. 93-101.

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བ, b voiced bilabial. In Modern Central Tibetan found only after prefixes. Ex. འབུམ, 'bum, "100,000", pronounced bum.

b̯, indistinct voiced bilabial. Exp. བ, ba, "cow," pronounced b̯a.

ན, n alveolar nasal.

ང, ŋ (a) velar nasal, like English "bring." At the beginning of words it has a peculiar fricative pronunciation. Ex. ང, ŋa, "I", pronounced ŋà.

ɲ palatal nasal, like Spanish ñ.

མ, m bilabial nasal.

ས, s, dental sibilant, like English "son."

ཟ, z, unvoiced alveolar sibilant, the modern unvoiced pronunciation of the ancient alveolar voiced spirant z.

ཤ, š, palatal sibilant, like English sh. An ancient ž.

ཥ, ʃ̣, palatal sibilant made with the front of the tongue.

ཧ, ɦ, voiced glottal fricative. Ex. ཧ་ཅང, ha-čang, "very," pronounced ɦa-čaŋ.

ཡ, ĭ, semi-vowel or consonantal ĭ, like Russian ja.

ཝ, བ, w bilabial semi-vowel

ར, r, front palatal voiced

ལ, l, "clear l".

ཨ, vowel support.

Compound consonants in Modern Central Tibetan. The seven consonants with a subjoined semi-vowel ཡ.

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[ཡ་བདག་སྐ]

	ཀྱ་	ཁྱ་	གྱ་	པྱ་	ཕྱ་	བྱ་	མྱ།
Transcr.	kya	khya	gya	pya	phya	bya	mya.
Pron.	čĭa	$č^{h}$ĭa	ǰĭa	čĭa	$č^{h}$ĭa	ǰĭa	ɲa.
			gĭa	ča	$č^{h}$a		
						čĭa(ča)	

The thirteen consonants with a subjoined 'r'.

[ར་བདག་སྐ]

	ཀྲ་	ཁྲ་	གྲ་	ཏྲ་	ཐྲ་	དྲ་	ཧྲ་
Transcr.	kra	khra	gra	tra	thra	dra	hra
Pron.	ṭa	$ṭ^{h}$a	ḍa	ṭa	$ṭ^{h}$a	ḍa	ṭa
	ཕྲ་	བྲ་	མྲ་	ཟྲ་	སྲ་	ཧྲ།	
	phra	bra	mra	zra	gra	hra	
	$ṭ^{h}$a	ḍa	mā	ʃa	sā	ɦā.	

The six consonants with a subjoined 'l'.

[ལ་བདག་སྐ]

	ཀླ་	གླ་	བླ་	རླ་	སླ་	ཟླ།
Transcr.	kla	gla	bla	rla	sla	zla
Pron.	la	la	la	la	la	ḍa.

The sixteen consonants with a subjoined— ྭ་

[ཝ་ཞུར་བདག་སྐ་ཡ]

	ཀྭ་	ཁྭ་	གྭ་	ཅྭ་	ཉྭ་	ཏྭ་	དྭ་	ཙྭ་
Transcr.	kva	khva	gva	čva	ñva	tva	dva	tsva
Pron.	kā	k^{h}ā	gā	čā	ɲā	tā	dā	ʦā
	ཚྭ་	ཞྭ་	ཟྭ་	རྭ་	ལྭ་	ཤྭ་	སྭ་	ཧྭ།
	ʦhva	švа	zva	rva	lva	çva	sva	hva
	ʦha	šā	sā	rā	lā	ʃā	sā	ɦā.

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The twelve consonants with a prefixed 'r'.

[ར་མགོ]

	རྐ་	རྒ་	རྙ་	རྗ་	རྞ་	རྟ་
Transcr.	rka	rga	rña	rǰa	rña	rta
Pron.	ka	ga	ŋa	ǰa	ŋa	ta
	རྡ་	རྣ་	རྦ་	རྨ་	རྩ་	རྫ།
	rda	rna	rba	rma	rtsa	rdza.
	da	na	ba	ma	ʦa	ʣa.

The ten consonants with a prefixed 'l'.

[ལ་མགོ]

	ལྐ་	ལྒ་	ལྙ་	ལྕ་	ལྗ་	ལྟ་	ལྡ་	ལྤ་	ལྦ་	ལྷ།
Transcr.	lka	lga	lña	lča	lǰa	lta	lda	lpa	lba	lha
Pron.	ka	ga	ŋa	ča	ǰa	ta	da	pa	wa	lâ

The eleven consonants with prefixed 's'.

[ས་མགོ]

	སྐ་	སྒ་	སྙ་	སྞ་	སྟ་	སྡ་
Transcr.	ska	sga	sña	sña	sta	sda
Pron.	ka	ga	ŋa	ŋa	ta	da
	སྣ་	སྤ་	སྦ་	སྨ་	སྩ།	
	sna	spa	sba	sma	stsa.	
	na	pa	ba	ma	ʦa.	

(1) The loss of prefixes and suffixes.

Under this heading, I shall discuss the treatment of the five prefixed letters g, d, b, m, h (ʾ), and the three superadded letters 'r,' 'l,' and 's.' In the Modern Central Tibetan the prefixed letters are as a rule left unpronounced. Each of the prefixed letters can be followed by a certain number of consonants :—

g is found before č, ň, t, d, n, ʦ, š, z, ya, ç, s.
d is found before k, g, ň, p, b, m.
b is found before k, g, č, ǰ, ñ, t, d, rn, ʦ, ʣ, š, z, rl, ç, s.
m is found before kh, g, ň, čh, ǰ, ñ, th, d, n, ʦh, ʣ.
h is found before kh, g, čh, ǰ, th, d, ph, b, ʦh, ʣ.

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Ex. གཅིག, gčig, "one", pronounced či^{k}; དངུལ, dṅul, "silver," pronounced ŋü. མཁན་པོ, mkhan-po, "abbot," pronounced khæ̃-po.

The consonantal combination དབ, db—has the sound of a semi-vowel "w".

Ex. དབང་, dbaṅ, power, pronouuced waŋ. In case db—is followed by a subjoined 'ya', the last one is only pronounced. Ex. དབྱངས, dbyaṅs, pronouncd yaŋ, "tune".

In Modern Central Tibetan the superscribed letters r, l, and s are as a rule unpronounced but the following consonant is affected.

Ex. རྒད་པོ, rgad-po, "old", according to the phonetic usage in Modern Central Tibetan, the word should be pronounced ke-po, but because of the preceding 'r' the following consonant remains voiced, and the word is pronounced ge-po. Cf. རྡོ, rdo, "stone", pronounced do.

When occurring at the beginning of the second syllables of words, the superscribed 'r' is pronounced. Ex. རྡོ་རྗེ, rdorje, "thunderbolt", pronounced dor-ǰe. In the archaic dialects of the nomads རྟ, rta, "horse" is pronounced răta, whereas in Modern Central Tibetan it is pronounced ta. The other two superscribed letters 'l' and 's' are as a rule dropped, except ལྷ, lha, pronounced l^{h}a, "god".

In the Ladakī dialect an 's' is often prefixed to words which begin with prefixes. Ex. དཔེ་ཆ, dpe-cha, "book," pronounced in Ladakī ^{s}pe-č^{h}a;

The Go-log and Pa-nag dialects often prefix an 'r' to words beginning with a prefix. Ex. ལྟ་བ, lta-ba, "to look", pronounced rta-wa. Lh. ta-wa.

སྒོ, sgo, "door", pronounced rgo. Lhasa: go.

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སྐད, skad, "speech", pronounced rkad. Lhasa: ke.

But, ར, rta is again pronounced as in Ladakī ˢta.

The final consonants are as a rule dropped in Modern Central Tibetan, and affect the preceding vowel, its timbre and quantity. I shall speak about them fully under the next paragraph.

Final suffixal 's' is always dropped, and the preceding consonant is treated as if it were a final:

Ex. རྣམས, rnams, pronounced nam; ལུགས་སྲོལ, lugs-srol, "manner, custom", pronounced luᵏ-sō; ལགས་སོ, lags-so, "very well," pronounced lā-so (the suffixal 's' is dropped together with the preceding velar, and the vowel is lengthened).

(2) The palatalization (softening) of vowels and consonants.

The Modern Central Tibetan dialects have until now preserved two pronunciations of words beginning with an ancient velar, followed by a subjoined semi-vowel 'i': a velar and a palatalized.

Ex. the word ཁྱི, khyi, "dog" is pronounced both kʰ̆ii, and čʰ̆ii.

ཁྱོད, khyod,, "you", is both pronounced kʰ̆ĭō, and čʰ̆ĭō. > čʰö.

བརྒྱད, brgyad, "eight", is both pronounced gĭæ, and ǰĭæ. In the Modern Central Tibetan one hears oftener gĭæ, whereas in the Khams dialect, which is also strongly subject to palatalization, has ǰĭæ.

རྒྱལ་པོ, rgyal-po, "king", is pronounced both gĭæ-po and ǰĭæ-po. J̌ĭæ-po is the regular pronunciation in the Khams dialect.

In all the above cases the initial velar changed to a corresponding affricate under the influence of the subjoined semi-vowel.

In the above the Modern Central Tibetan forms a good parallel to the Chinese, where ancient velars changed to dental affricates.

Ex. 詰, "investigate" is pronounced ʦ'i in modern Pekinese, but was anciently pronounced k'i̯ĕt.

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This phenomenon of palatalization of vowel and consonant sounds is common in different degrees to all the Tibetan dialects.

Ex. འདོད་པ, dod-pa, to wish, Nya-rong: död-pa; Khams: dō̄-pa; Lhasa: ḍō̄-pa.

The palatalization of vowels is caused by the loss of final consonants in Modern Central Tibetan. Just as in Chinese, the vowel of a Tibetan syllable ending in a consonant is "conscious" of the consonant following it.

There are ten final consonants in Modern Central Tibetan most of which are lost in the modern idiom.

g- at the end of a word has a hardly perceptible pronunciation of a 'k'. Ex. ལུག, lug, sheep, pronounced lu^{k}.

ŋ- is the most difficult sound of Modern Central Tibetan. At the beginning of a word it sounds as a strong nasal velar, a kind of nasal fricative. When pronounced, the tongue occupies a middle position in the oral cavity, without touching either the teeth, or the palate. The sound is then pronounced with a strong expiration.

Ex. ང་, ŋa, I; ལྔ་, lŋa, five, pronounced ŋà.

When at the end of words it has the soundo f -ng in the English 'bring'.

Ex. མིང་, ming, name, pronounced miŋ.

d, l, s are dropped, and the preceding vowels palatalized and lengthened. a×$^{\underset{\bar{e}}{\bar{æ}}}$; u > ū̄; o > ō̄

Ex. བདུད, bdud, devil, pronounced ḍū̄ (the prefixed voiced bilabial is dropped but the following dental is left voiced).

གསོལ་བ, gsol-ba, to pray, pronounced sō̄-wa.

སྤོས, spos, incense, pronounced pō̄.

n- the preceding vowel is palatalized, nasalized, and lengthened.

Final dental nasal 'n' is changed to a bilabial nasal 'm', or dropped and the preceding vowel is palatalized, nasalized, and lengthened:

Ex. ལེན་པ, len-pa, to take, pronounced lem-pa, or more often lǣ̃.pa.

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བདུན, bdun, seven, pronounced dū̃.

བློན་ཆེན, blon-čhen, minister, pronounced lõ̃-čʰɛ̃̃.

d, m, r- these three finals do not affect the pronunciation of the preceding vowel, and are pronounced.

ཚབ, tsab, substitute, pronounced tsap.

སྒམ, sgam, box, pronounced gam.

མར, mar, butter, pronounced mar, sometimes one hears má. (high rising tone)

བ, ba as an agentive particle after vowels and liquids 'r' and 'l' has the sound of an English semi-vowel w.

Ex. འགྲོ་བ, 'gro-ba, to go, pronounced ḍo-wa.

གཏོར་བ, gtor-ba, to spread, pronounced tor-wa.

གསོལ་བ, gsol-ba, to pray, pronounced sõ̃-wa.

འ, h̲. It is difficult to determine the true nature of this sound.[1] I shall note here several of its pronunciations. At the beginning of a word with an initial vowel it is pronounced as a semi-vowel 'w'.

Ex. འུག་པ, 'ug-pa, owl, pronounced u̯uk-pa.

When standing at the end of a word it lengthens the preceding vowel.

Ex. བཀའ, bkah̲, order, pronounced kā; ནམ་མཁའ, nam-mkhah̲, sky, pronounced nam-kʰā.

At the beginning of the second syllable of a word, it has often a nasal pronunciation. Ex. བཀའ་འགྱུར, bkah̲-'gyur, pronounced Kɐ̃n-ǰür.

As a prefix it often interchanges with the bilabial nasal 'm'

[1] See description given by Dr. J. van Manen, reproduced in Schrader's Transcription and Explanation of the Siamese Alphabet, Asia Major, I, p. 56.

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Ex. འཐུན་པ་—མཐུན་པ། འགོ་—མགོ། འཛིན་པ་—མཛིན་པ།

'thun-pa—mthun-pa; 'go'—mgo; 'dzin-pa'—mdzin-pa;
Further examples of nasal pronunciation of 'h̲':

ཞལ་འདེབས, šal-'debs, offering, pronounced šą̱n-dep *

> šą̱̃-dep.

ཞབས་འདྲེན, šabs-'dren, degradation, pronounced šam-ḍą̱̃

(in the first word, the final '1' of the first syllable is dropped, and the initial 'h̲' is nasalized, and the following dental under the influence of the preceding nasal dental remains voiced; in the second case the final 'bs' is dropped, and the 'h̲' of the second syllable nasalized, becoming nasal bilabial under the influence of the preceding bilabial 'b'). The dropping of final consonants has produced homophonous syllables, and what is worse of similar tone. In order to distinguish between them the Tibetan has adopted, similar to the Chinese, a certain mode of expression in which two words of similar meaning or related meaning are grouped together, thus explaining each other. Dr. B. Karlgren has called such compounds "synonym compounds". Ex. ན་ཚ, na-ʦha, illness, pronounced na-ʦha, where 'na' means "illness," and ʦha-wa "fever, or illness in general". The word 'na' if used alone, could be easily mistaken for a similarly pronounced word སྣ, sna, nose, pronounced na. The word སྐུན་འདྲ, kün-ḍa "image, figure," is also properly speaking a synonym compound, for both syllables have the same meaning "image, form, shape." The frequently occurring honorific expression ཐུགས་སེམས, thugs-sems, 'thought', pronounced thu-sem, belongs to the same class of compounds, as both words have the same meaning "mind, thought, opinion". Some words of related meaning are grouped together, as for example ཞོ་ཁྲལ, ço-khral, custom duty, pronounced ʃo-tʰe, where 'ʃo' means dice, or any game in which money is involved, and 'tʰe' is the proper word for "tax."

Compare the Chinese expression 意思, i-sï, "meaning," in which both words have the same meaning.

(3) The change of voiced consonants to unvoiced of a corresponding class, and the retaining of voiced after prefixes.

A comparative study of living Tibetan dialects reveals the important fact that in ancient Tibetan the voiced were pronounced, and that many present unvoiced were ancient voiced.

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The Modern Central Tibetan dialects have lost all voiced, which are pronounced unvoiced, except when a voiced is preceded by a prefix, in which case it preserves its voiced pronunciation. In the archaic nomad dialects all ancient voiced are still pronounced as such, and even some of the ancient unvoiced under the influence of the prefix become voiced.

Ex. གསོ་བ, gso-ba, to make, pronounced Lhasa: so-wa, but in the Hor dialect it is pronounced zo-wa, with an alveolar voiced spirant.

The name for Tibetans བོད་པ, Bod-pa is pronounced bod-pa by the Hor-pas north of the Thang La, and the Nya-rong-was, but the Hor-pas south of the Thang La pronounce it already bo-pa, and sometimes pó-pa, the last form has been taken over from the neighbouring Modern Central Tibetan dialects, and has preserved its pronunciation. The Amdo pronunciation *wo-pa is wholly anomalous. It would be interesting to study this semi-vowel pronunciation of an initial bilabial voiced. Rev. Jäschke in the phonetic table of Tibetan dialects appended to the introduction of his dictionary gives wo-mo as the pronunciation of བུ་མོ, bu-mo, girl, Lhasa: pu-mo, in the Khams dialect. It is a great pity he did not specify the dialect more fully. Was it the dialect of Khams that is the mountain country round Chamdo, or some other dialect of Eastern Tibet? From the pronunciation given in the table it sounds as Amdo.

That voiced were pronounced in ancient Tibetan is proved by Tibetan transcriptions of Chinese words. Ex. the palatal sibilant ཞ, ž is pronounced unvoiced in Modern Central Tibetan, but voiced in the archaic nomad dialects. བཞི, bži, four, is pronounced ši in Modern Central Tibetan, and ži in the Hor dialect and the Ladakī. We have Tibetan transcriptions of Chinese words to prove that such has been the case in ancient times. The modern Chinese huo-šang, 和尚, represents an ancient *γūa-ži̯aṅ, the second syllable beginning with a sonant fricative. Now the usual Tibetan transcription of the word is ཧྭ་ཤང་, hva-šaṅ, pronounced ĥā-šaŋ, which corresponds to an ancient *ɦʷa-žaṅ, which is a fairly good reproduction of the Chinese original.

The disappearance of ancient voiced has resulted in a curious phenomenon: the use of perfect stems in the present

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tense. In Modern Central Tibetan one says: བཀག་གི་འདུག, bkag-gi 'dug, "he hinders," pronounced ka-gi du, and not འགེགས་ཀྱི་འདུག, 'gegs-kyi 'dug, which would be the proper form to use. The cause for such a phenomenon is easily found. We know already the tendency of the language to pronounce initial consonants as unvoiced, unless they are preceded by a prefix. Now the perfect stems of Tibetan verbs often have initial unvoiced, whereas the present stems have voiced initials.

Ex. འགེབས་པ, 'gebs-pa, to cover, pf. bkab, pronounced kap.

འགེལ་བ, 'gel-ba, to load, pf. bkal, pronounced in Mod. C. Tibetan: kal, kē.

འདེབས་པ, 'debs-pa, to establish, pf. btab, pronounced tap.

འདོན་པ, 'don-pa, to expel, pf. bton, pronounced tō̃.

འབུལ་བ, 'bul-ba, to present, pf. phul, pronounced pʰū̃.

འཇོག་པ, 'jog-pa, to place, pf. bšag, pronounced šá with a rising tone. In colloquial only the last form is used.

འབེབས་པ, 'bebs-pa, to cast down, pf phab, pronounced pʰap.

The general tendency of the language has influenced the use of verbal forms in the modern idiom.

(4) The loss of final dental nasal, and the nasalization of the preceding vowel.

This phenomenon is especially characteristic of the Modern Central Tibetan. I had the occasion to refer to it before. The final dental nasal ན, n is dropped, and the preceding vowel nasalized and lengthened. In case the preceding vowel is 'o' or 'n', it is palatalized, and becomes 'ö' and 'ü' before receiving the nasalization.

Ex. སྐྱོན, skyon, imperfection, pronounced čị̃ō̃.

སེམས་ཅན, sems-čan, living being, pronounced sem-čē̃.

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དོན་ཆེན, don-čhen, of high importance, pronounced tõ-ɕʰɛ̃.

དགེ་རྒན, dge-rgan, teacher, pronounced ge-gɛ̃.

(5) The simplifying of compound consonants, changing them into domal dentals, and palatal affricates.

A striking feature of the Modern Central Tibetan is that it does not suffer consonantal groups or several consonants together at the beginning of words. The Tibetan orthography still represents the ancient state of things (VII–IXth A.D.), when Tibetan was a dissyllabic language.

With the gradual disappearance of prefixes in the spoken language, it became quite impossible to articulate compound consonants, that is several consonants at the beginning of words.

Compound consonants with a subjoined 'r' gradually changed into domal dentals, and those with a subjoined semivowel 'i' became palatal affricates.

ག, gra > Pa-nag and Khams: ǰʳa > Lhasa ɖʳa > ɖa > ʈa.

ཀ, kra > Pa-nag and Khams: čʳa > Lhasa: ʈʳa > ʈa.

ག, gra
ད, dra
བ, bra
} ɖʳa > ɖa > ʈa.

ཀ, kra
པ, pra
} ʈʳa > ʈa.

ཁ, khra
ཕ, phra
} ʈʰʳa > ʈʰa.

Ex. འགྲོ་བ, 'gro-ba, to go, pronounced ɖo-wa, sometimes ɖʳo-wa.

དྲག་པོ, drag-po, fierce, pronounced ɖak-po, sometimes ɖʳak-po.

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གྲུབ, grub, pf. of 'grub-pa, to accomplish, pronounced ṭup or ṭ^{x}up.

འཁྲིད་པ, 'khrid-pa, to lead, pronounced ṭ^{h}i-pa.

ཕྲག, phrag, ravine, pronounced ṭ^{h}ak, ṭ^{hr}ak.

It will be noticed from the above that sometimes an 'r' is sounded after the domal dental. It shows that the process of transformation of compound consonants into simple domal dentals is not yet finished, and this results in a certain fluctuation of pronunciation.

ཀྱ, pya > ča Ex. སྤྱོད་, spyod, conduct, pronounced čö.

ཕྱ, phya > č^{h}a. Ex. ཕྱག, phyag, hand, pronounced ǰ^{h}ak.

བྱ, bya > ǰa > ča. Ex. བྱམས་པ, byams-pa, Maitreya, pronounced čiam-pa.[1]

The native Tibetan scholars say that 'bya' has the sound of ཇ, ǰ, but ǰ in modern pronunciation is pronounced similarly to ཛ, ǯ.

Some of the words with initial compound consonants have an irregular pronunciation, very often they are borrowings from other dialects, and preserved their dialectical pronunciation.

Ex. སྦྲ་ནག, sbra-nag, "black felt tent of the nomads" is pronounced bā-nag in the nomad dialects. In the Central Tibetan we should expect a pronunciation ḍa-na^{k}, but it is usually pronounced ba-na^{k}, because the word has been borrowed from the nomads, and has preserved its pronunciation of the nomadic north. The autochthon word for tent in Modern Central Tibetan is གུར, gur, pronounced kur.

(6) The tone system in Modern Central Tibetan.

It is not my object to give here an exhaustive study of the

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[1] But འབྱམ་པ 'byam-pa, to flow over, because of the prefixed 'h' is pronounced ǰam-pa.

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Tibetan tone system, its ancient aspect, and the differences existing between the ancient Tibetan, and the Modern spoken Tibetan. Such a study necessitates a thorough comparative study of all the existing dialects from the point of view of their respective tonetics, and the settling of the question of the influence exercised by the prefixes and suffixes on the tone My object is to give a descriptive account of the tone system in Modern Central Tibetan, as spoken in the provinces of Ü and Tsang.

A tone is essentially an acoustic pitch inherent in the word. Of all the Tibetan dialects, the Modern Central Tibetan has the fullest tone system, which plays a highly important part in it. In every Tibetan word there is inherent a certain tone, and words otherwise phonetically identical can be distinguished by their different tones. The tone system of the Tibetan language must have undergone considerable changes in the course of time, and the modern spoken dialects have a varying number of tones. It is well known that tones are often due to the disappearance of prefixes. The ancient Tibetan has been an essentially dissyllabic language, most of its words being composed of a prefix and an accented root. The unaccented prefix with a very short vowel (irrational) gradually wore away, and the accent on the word, which became a monosyllable, gradually changed into a melody or tone, indicating the former existence of the disappeared prefix. In those dialects in which the prefixes are still used, there is less necessity for tones. Such idioms, as the Western Tibetan dialects, the archaic nomad dialects of the North-East, and some of the East Tibetan dialects, which have preserved the pronunciation of some of the prefixes, have almost no tone system altogether, on the contrary those of Central Tibet, and some of the South-eastern Dialects (Kongpo, Po-yul), which have lost the pronunciation of prefixes, developed a tone system, essential for the correct understanding of a Tibetan sentence. To transcribe the Modern Central Tibetan phonetically without indicating the tone or acoustic pitch will render the language utterly unintelligible.

Different scholars proposed different schemes of Tibetan tone system. Rev. Jäschke distinguished between two tones, the high and the deep one. The high tone, according to him, is found in words beginning with soft consonants preceded by a prefix or else beginning with a hard consonant, the second was found in words beginning with uncompounded soft consonants in the written language. Rev. Jäschke, who did much excellent pioneer work in the field of Tibetan phonetics, laboured in Western Tibet, and his scheme of Tibetan tones does not cover well the system of tones existing in Modern Central Tibetan.

Rev. Graham Sandberg, whose object of study has been the Modern Central Tibetan, distinguished three tones:

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The high pitched གསེར, gser, nail, pron. ser.

The medial གསེར, gser, gold, pron. ser.

Low resonant ཟེར, zer, said, pron. ser.

Cf. Rev. Graham Sandberg, Handbook of Colloquial Tibetan, Calcutta, 1894, p. 13.

Professor August Conrady in his "Eine Indochniesische Causative-Denominative Bildung", 1896, pp. 91-103, followed the above system with slight modifications.

Rev. E. Amundsen in his "Primer of Standard Tibetan", has proposed a scheme of six tones, which number can, however, be reduced to four, as in two cases the difference depends only on the length of the tone, and not on its musical height.

Tone 1. High pitched; often nasal, and short as if butted against something.

Tone 2. High like Tone 1, but long.

Tone 3. Medium pitch and short like tone 1.

Tone 4. Medium pitch and long.

Tone 5. Curved tone; deep but gradually raised to medium pitch, like saying "two" in a surprised questioning tone.

Tone 6. Descending long tone.

Rev. E. Amundsen has based his scheme of tones on the classification of ancient Tibetan tones by native grammarians, as found in the Si-tūi Sum-tak (སི་དཱུའི་སུམ་རྟགས): ཕོ, pho, high; མ་ནིཾ, ma-niṅ, medium; མོ, mo, low; ཇིན་དུ་མོ, çin-tu-mo, very low; མོ་གཞམ, mo-gçam, lowest; མཚན་མེད, mtshan-med, nameless.[1]

This ancient classification does not correspond to the system of tones in the Modern Central Tibetan. I venture to propose a somewhat different scheme, which corresponds well to he modern position of tones in the spoken Central Tibetan.

The Modern Central Tibetan has three tones: the rising tone, the even tone, and the falling tone, each of these tones can in its turn be pronounced in a high pitch and a low pitch, making in all six melodies or tones.

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[1] The above terms are alternative designations for the different classes of sounds ||letters||, and have nothing to do with the tones.

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Signs adopted.

1. Rising tone
   - high ″ སེར་པོ, ser-po, yellow, pron. se″-po.
   - low ′ [1] གསལ་པོ, gsal-po, bright, pron. se′-po.

II. Even tone
   - High long = སྲས, sras, son, pron. sē=
   - Low long = ས, sas, instrumental of ས, sa, earth, pron. sē —

I. Falling tone
   - high accented ◌̀ བསད, bsad, pf. of གསོད་པ, gsod-pa, to kill, pron. se◌̀.
   - low abrupt སེད, sed, file, pron. se◌̀.

Let us take the syllable ‘ pö ’. If pronounced in the rising tone, it means “ away, off ”, and is written བོས, bos, pron. pō″, as in the sentence ཁོ་བོས་ཕྱིན་པ་རེད, kho bros phyin-pa-red, pronounced khò pō″ čī-pà-rè, “ he went off ”. If pronounced in the high even tone pō, it means “ incense ”, and is written སྤོས, spos. Finally, if we say in an abrupt falling tone pö◌̀, the word will mean “ Tibet ”, and is written བོད, Bod

The syllable ‘ ɲi ’ has several pronounciations :

ཉིད, ñid, self, pronounced in the high rising tone ɲi″.

སྙིགས་པ, sñigs-pa, degenerated, pronounced in the low rising tone ɲi(ḳ)′-pa.

གཉིས, gñis, two, pronounced in the even tone (high long) ɲi=.

[1] The low rising tone has a tendency to disappear from the language, although still heard in some districts.

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རྙི, rñi, trap, pronounced in the even tone (low long) ɲi—.

བསྒྲིད, gñid, sleep, pronounced in the falling tone (high accented) ɲi᷄.

རྙིད་པ, rñid-pa, to fade, pronounced in the abrupt tone ɲi᷅.

It can be clearly seen from the above examples that the presence of a prefix or suffix affects the tone of the word, the first accentuates the pronunciation; the second, by changing the timbre and quantity of the preceding vowel, affects the tone.

Ex. ཀ་བ, ka-ba, pillar, a word neither preceded by a prefix, nor followed by a suffix, is pronounced kà-wa with an abrupt falling tone.

སྐ་བ, ska-ba, thick, preceded by the prefix 's', is pronounced ka᷄-wa in a high accented falling tone.

བཀའ, bkaḫ,
དཀའ, dkaḫ, } preceded by prefixes, and followed by 'ḫ' (which should be considered here as a suffix) are both pronounced kā⁼ with a high high even tone.

བཀག, bkag, pf. of འགེགས་པ, 'gegs-pa, to hinder, pronounced ka″. The word has a prefix, and is therefore pronounced accented with a high pitch, the suffix-g, pronounced as a sharp short ᵏ makes the timbre of the preceding vowel rise, and the word is pronounced with a high rising tone kaᵏ″ > ka″, as in the sentence ལམ་ཀ་བཀག་པ་རེད, lam-ka bkag-pa-red, the road has been blocked, pronounced lam᷅-kà ka″-wà-rè (pa is usually pronounced wa in the colloquial language).

It is interesting to note that the above scheme of tones, rising, even, falling, corresponds well to the tone system in the Chinese of the VIth century A.D., which had an even, a rising, a falling, and an abrupt tone, each of the three could be pronounced in a high and low pitch—making in all eight different melodies. The only difference is that in the Tibetan system, the abrupt tone represents a variety of the falling tone.

The tones have considerably reduced the number of homophones in Central Tibetan, yet in rapid speaking, and specially in writing (Tibetan using an alphabet has not the benefits of

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the ideographic scripts of the Chinese in rendering homophonous words; a word unorthographically written often changes completely the meaning of a sentence, and the real sense has to be discovered from the context) mistakes are often made even by Tibetans themselves. In order to remedy the situation the Tibetan language uses synonym compounds, which have been already mentioned in the course of the present paper.

The study of Tibetan compounds will undoubtedly reveal many important facts for the evolution of the language.

In conclusion, I must say, that Tibetan evolves on closely similar lines to the Chinese. The loss of old consonanted groups at the beginning of words; the loss of final consonants (Central Tibetan is not yet through with the process); tendency to replace voiced consonants by corresponding unvoiced; change of initial gutturals to affricates—to mention only a few similarities.

The study of Tibetan is highly important for Sinological studies, for the phonetic transcription of the Tibetan of the VIIth century A.D. created by Thon-mi Sambhoṭa and his colleagues, faithfully preserves all that Chinese has lost, and Modern Central Tibetan shows us a language in the process of evolution towards a goal very similar to the present state of Chinese.

I close the present paper by giving a short Tibetan text in transcription according to the pronunciation of Modern Central Tibetan, and marking the tone of each word.

HILLSIDE,
Darjeeling.
12*th October*, 1928.

GEORGES DE ROERICH.

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The story of Lost Son.

༡། བུ་སྟོར་བའི་ལོ་རྒྱུས།

མི་ཅིག་གི་བུ་སྟོར་ནས་ཕས་འཚོལ་དུ་ཕྱིན་པས། བུ་མ་རྙེད་ནས་ཁོང་རང་གིས་ཡུལ་གཅིག་བཟུང་ནས་ནོར་མང་པོ་བསགས་ཏེ་ལོངས་སྤྱོད་ཆེན་པོ་བྱེད་ཀྱིན་ཡོད་པའི་དུས་ན། ལན་ཅིག་བུ་དེ་ཡུད་ཙམ་ཅིག་བྱུང་བ་ལ་ཕས་ངོ་ཤེས་ནས། ཕས་ཐབས་བྱས་ཏེ། དང་པོ་རང་ནས་བཟུང་ན་རྒྱལ་པོ་འི་ཆད་པའམ། ཆོ་མ་གཅིག་བྱུང་སྙམ་ནས་བྲོས་ཏེ་འགྲོ་བས། དང་པོ་མ་བཟུང་བར་སྤྲང་པོ་འི་ཟླ་ལ་བཞག། དེ་ནས་ཡང་ཚུར་བསྙེན་ཏེ་སྤང་འཕྱག་ཏུ་བཅུག། བཟའ་ཡང་དྲག་ཏུ་བྱིན། དེ་ནས་ཁྱོད་གོ་ཆོད་པར་འདུག་པས་ནང་ལས་གྱིས་བྱས་ནས་ནང་ལ་བཅུག། དེ་ནས་མཛོད་ཀྱི་ལྡེ་མིག་གཏད་དེ་བག་ཕེབས་པར་བྱས་ནས། ཕྱིས་ཕ་འཆི་བའི་དུས་སུ་ཉེ་དུ་རྣམས་བསགས་ནས། འདི་ངའི་བུ་ཡིན་པ་ལ། སྟོར་ནས་ཡུན་རིང་དུ་ལོན་པའི་གཏམ་བྱས་ནས། ད་ང་རྒས་པས་ཁྱེད་ཀྱིས་ང་ལ་ཇི་ལྟར་བྱེད་པ་བཞིན་དུ་འདི་ལ་གྱིས་ཤིག་བྱས་ནས། དབང་ཕྱུག་ལ་དབང་བྱེད་དུ་བཅུག་གོ། དེ་བཞིན་དུ་སློབ་དཔོན་མཁས་པས་སློབ་མ་ལ་ཡོན་ཏན་བསླབ་ལུགས་དང་པོ་གོ་སླ་བ་ནས་རིམ་གྱིས་འཁྲིད་ན་བརྟན་པོར་འགྱུར་བ་ཡིན་ནོ།།

[From the དམ་ཆོས་པད་དཀར། Dam-č'os pad-dkar].

Transcription :

Bu. stor. baẖi. lo. rgyus.

Mi. gčig. gi. bu. stor. nas. phas 'tshol. du phyin. pas. Bu. ma. rñed. nas. khoṅ. raṅ. gis. yul. gčig. bzuṅ. nas. nor.

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maṅ. po. bsags. te loṅs. spyod. čhen. po. byed. kyin. yod. paẖi. dus. na/ lan. čig. bu. de. yud. tsam. čig. byuṅ. ba. la phas. ṅo. çes. nas/ phas. thabs. byas. te/ daṅ por. raṅ. nas. bzuṅ. na. rgyal. poẖi. čhad. pa'm/ čho. ma. gčig. byuṅ. sñam. nas. bros. te. 'gro. bas/ daṅ. po. ma. bzuṅ bar. spraṅ. poẖi. zla. la. bšag/ de. nas. yaṅ tshur. bsñen. te. sraṅ. 'phyag. tu. bčug/ bzaẖ. yaṅ. drag. tu. byin/ de. nas. khyod. go. čhod. par 'dug. pas. naṅ las. gyis. byas nas. naṅ. la bčug/ de. nas. mdzod kyi. lde. mig. gtad. de. bag. phebs. par. byas. nas/ phyis. pha. 'čhi baẖi. dus. su. ñe du. rnams. bsags. nas/ 'di. ṅaẖi. bu. yin. pa. la/ stor. nas. yun. riṅ. du. lon. paẖi. gtam. byas. nas/ da. ṅa. rgas. pas. khyed. kyis. ṅa. la. ji. ltar. byed. pa. bšin. du. 'di. la. gyis. çig. byas. nas/ dbaṅ. phyug. la. dbaṅ. byed. du. bčug. go/ de. bšin. du. slob. dpon. mkhas. pas. slob. ma. la. yon. tan. bslab. lugs. daṅ. po. go. sla. ba. nas. rim. gyis. khrid. na. brtan. por. 'gyur. ba. yin. no.

The Story of a Lost Son.

| *Phonetic transcription* |

Pu̍-tor″-weⁱ′ lo̍-ǰū̄ –.

mi̍-čiᵏ̍-gi⁻ pu̍ tor″-nē= pʰē⁻ ʈshol′-du⁻ čī̄-⁻ pē⁻. Pu̍ ma̍-ɲe̍-nē= khoŋ̍-raŋ̍-gi⁻ĭū̄-⁻ čiᵏ̍ suŋ̍-nē= nor̍-maŋ̍-po̍sa′-te̍ loŋ̍-čö⁻ čʰē̍-po⁻ če̍-kĭī̄-⁻ ĭö-⁻ peⁱ⁻ tū̄-⁻ na⁻ lē̃-⁻ čiᵏ̍ pu̍-te⁻ ĭü̍̍-ʈsam̍-čiᵏ̍ čuŋ̍-wa-⁻-la⁻pʰē⁻ ŋo̍-ʃe-⁻nē=, pʰe⁻ tʰap̍̍-če⁻-te̍̍: ″taŋ̍̍-po⁻ raŋ̍-nē⁻ suŋ̍̍-na⁻ gĭæ̯⁻-pöⁱ= če̍-pa̍-am̍̍, čʰo̍̍-ma̍-čiᵏ̍ čuŋ̍ ɲam̍-ne= pō̄″-te⁻ ḍo̍-we⁻.“ Taŋ̍-po̍̍ ma̍-suŋ̍-war̍ taŋ̍̍-pöⁱ⁻ ḍa⁻-la⁻ ša′. Te̍-nē= ĭaŋ̍ ʈshur̍-ɲē̃⁻-te= saŋ̍ čʰaᵏ̍ tu⁻ čuᵏ̍̍. sā⁻-ĭaŋ̍ ʈaᵏ̍-tu⁻ čī̄⁻. Te̍-nē⁻ čĭō̍ ko̍-čʰō̍-par′ duᵏ̍pe⁻ naŋ̍-lē⁻ gĭi⁻ čē⁻-nē= naŋ̍-la⁻ čuᵏ̍. Te̍-ne⁻ ɖzö̍-kĭi⁻ de̍⁻mi̍ te̍-te=pa′-pʰep̍-par⁻ čē⁻-nē=. čʰi⁻- pʰa̍ čʰi⁻-weⁱ⁻ tū̄′-su⁻ɲe̍-tu̍-nam̍ sa′-nē= : “ Di⁻ŋēⁱ= pu̍ ĭī̄-pa⁻- la⁻, tor″-ne= ĭū̄⁻-riŋ⁻-du⁻ lō̃⁻-peⁱ⁻ tam̍-če⁻-nē=, ta̍ ŋa̍ ge⁻-pa⁻ kĭē̃-kĭi⁻ ŋa̍-la⁻ čī̍-tar̍ če⁻-pa̍ šī̄⁻-du⁻ di=-la⁻ gĭi⁻-ʃiᵏ′ če⁻-nē=, waŋ′-čʰuᵏ̍-la⁻ waŋ′-če⁻-du⁻čuᵏ-ko=.”

Te⁻-šī̄⁻-du⁻ lop̍-pō̃⁻ khē⁻-pē⁻ lop̍-ma̍-la⁻ ĭō̃⁻-tæ̃⁻lap̍-luᵏ̍ taŋ̍-po⁻ ko̍-la̍-wa̍-nē = rim̍-kĭi⁻ ʈi⁻-na⁻ tē̃⁻-po′-ǰür̍-wa⁻-ĭī̄⁻-no=.

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Translation.

A father having lost his son, set out to search for him Unable to find the boy, he settled in a certain country, and became very wealthy. One day he got a glimpse of his son for a moment, and recognised him.

He thought: "If I take hold of him at once, he will fear punishment from the king or a quarrel, and will run away." Accordingly he did not hold him, but left him among the beggars. When the boy came again, he bid him sweep the street, gave him plenty of food, and said: "If you do it well, you can perform some work in the house;" and he assigned him a task in the house. A little later he entrusted him with the key of the store-room.

After some time had elapsed, the father, feeling his death approach, said to the assembled relatives: "This is my son. He has been lost, but returned to me after a long period. I am aging; conduct yourselves towards him, as towards me. I place him under the mercy of the Protector."

So do the learned preceptors instruct their pupils, first beginning with easy assignments, and gradually establishing them in learning.

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Pahariya names of some Birds of Darjeeling.

By Satya Churn Law.

My attempt to record the *Pahariya* names of some Darjeeling birds was made during my bird-collecting expedition to the district in May-June last on behalf of the Zoological Survey of India. I am grateful to the Divisional Forest Officer for the permit to collect in the close season and the facilities kindly offered by him and the rangers, with their subordinate staff, of the various localities I visited. The names recorded below are by no means exhaustive, partly owing to the brevity of my visit and partly to the comparative dearth of the bird-vocabulary of the local hill people and my own ignorance of their language.

The *Pahariya*, as an element in the ethnic history of Sikhim, was a late accretion in the wake of the influx of Nepali settlers which followed the British occupation of Darjeeling in 1837. The original dialects were those of the three tribes, viz., Lepchas, Bhotiyas, and Limbus, who previously formed the sole population of Sikhim, each at first having their tradition and custom distinct from those of the other. According to L. A. Waddell (*J.A.S.B.*, Vol. LX, p. 55) the Lepcha origin of the mountain and river-names of the district points to the Lepchas as being the oldest aborigines, who seem to have preceded the Bhotan Bhotiyas in the trans-Tista (British Bhotan) portion of the Darjeeling district. With the immigration of the Bhotiyas from the Tsang Province of Tibet immediately to the north of Sikhim, the Lepchas gradually became a conquered race. Timid and peace-loving as they were, they were supplanted by the aggressors and relegated to their native woods. They appear, however, to be born naturalists and possess a name for nearly every natural product, animal or vegetable, discriminating between the various mountains and rivers, birds and plants. The dominant Bhotiya tribes on settling in Sikhim bestowed their own names on objects and sites which were already named, the reason being due, says Waddell, partly to the meaning of the Lepcha name being 'not evident and partly to express their contempt for the Lepchas'. Hence one finds current within the district a duplication or plurality of names for sites and objects, hills and rivers, etc. The Bhotiyas, however much they held the Lepchas in contumely, were not averse to intermarriage with the latter, and this intermingling was but a step towards the self-effacement of the Lepchas themselves,—an event to which they fast contributed. More

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peaceful invaders were the Limbus, a Mongoloid race from the adjoining hills on the west of Sikhim, which apparently had a superior civilisation, but withal did not disdain to marry the Lepchas. The British occupation of Darjeeling marked an epoch in the history of local ethnology. For, pursuant to the policy of the British Government in the peopling of the hitherto sparsely populated tracts of the district, there followed during the few subsequent decades a great influx of settlers from eastern Nepal composed of numerous distinct tribes, e.g., Newars, Kiranti, Murmi, Gurung, Mangar, etc. From a linguistic point of view the dialects of these settlers were practically homogeneous, as they mostly had adopted the Sanskritic *Parbatiya* along with the Hindu rituals of their Gorkhali rulers. The immediate consequence was the introduction of another element in the ethnic constitution. The dialect of the Nepali highlanders was latterly adopted by the Limbus. Contrary to what might be expected, the Nepali synonyms for already-named rivers, mountains, and sites are lacking in individuality. They are in most cases perverted copies or corruptions of the Lepcha or Bhotiya and sometimes of the current Bengali names. Grammatical accuracy can hardly be expected. The names, as regards their meaning, may be generally classed as descriptive. Mr. Herbert Stevens has rightly recorded that 'the Pahariya is not a close observer, confining his attention in particular to the various trees, bamboos, etc., as chiefly concerning his everyday wants. This trait seems to be developed in more primitive people, for, whereas the Lepcha has a name for each species of bird, the Pahariya, if he does recognise differences, is merely content in relegating birds of similar form and habits under one heading, as his bird-vocabulary is very limited. Neither has the younger generation got the grasp of the subject, and the increase of often spurious knowledge, instead of sound common sense education, may have something to do with their losing touch with nature' (*J.B.N.H.S.*, XXIX, p. 511).

The undernoted *Pahariya* names are invariably those of some birds of the district, which were breeding at the time of my visit and whose young, in most cases, were, with the aid of local *chokras* or hill boys, obtained by me. It is very striking that the elderly folk are utterly out of touch with nature and can hardly utter a name distinguishing one bird from another. It is the stay-at-home little boys who seem to know many birds and apply distinctive names to them. Many of these boys, however, have a devilish propensity for robbing birds of their nests and young.

KAK. A term, evidently adopted from Sanskrit, denotes a crow, both *Corvus macrorhynchos intermedius* (Adams) and *Corvus splendens splendens* (Vieill.). *Kak-jhora* in Darjeeling derives its name from the crowd of crows which congregate

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round the municipal rubbish heap which was formerly situated close to the *Jhora*.

LAM PUCHARI. Stevens (*J.B.N.H.S.*, Vol. XXIX, p. 514) records this *Pahariya* name for the Blue Magpie, *Urocissa flavirostris* (Blyth); the Green Magpie, *Cissa c. chinensis* (Bodd.), being known as *Dhori Koili*.

KOKILA. The Himalayan Tree Pie, *Dendrocitta formosae himalayansis* (Blyth).

LEK-BHALI. The Himalayan Nut-cracker, *Nucifraga caryocatactes hemispila* (Vig.).

CHI-CHIN-KOTI. Green-backed Tit, *Parus m. monticolus* (Vig.). This name obviously derives its origin from the characteristic notes of the bird.

CHAR-CHARI. Black-headed Sibia, *Leioptila c. capistrata* (Vig.). A very common bird in the Darjeeling district, of sprightly notes and overactive habits.

FISTA. *Ixulus f. flavicollis* (Hodgs.). Birds diminutive in size, noisy and gregarious are all grouped under *Fista*.

GYRALI. Another name for *Ixulus f. flavicollis* (Hodgs.), bestowed probably because of the crest or erectile feathers on the bird's head.

CHAR-BARI. *Leiothrix lutea calipyga* (Hodgs.). This name is descriptive of the noisy, gregarious and overactive habits of the bird.

JHAR-JHARI. Stevens records this name for the Red-billed *Leiothrix*; it is according to him, probably also used for *Mesia a. argentauris* (Hodgs.).

KAKI. The Himalayan Black Bulbul, *Microscelis p. psaroides* (Vig.).

KALI-GYRALI. Bengal Red-vented Bulbul, *Molpastes cafer bengalensis* (Blyth).

SOOL-SOOLI. Sikhim Tree-creeper, *Certhia d. discolor* (Blyth).

DYIRE. Dark-grey Bush-chat, *Rhodophila f. ferrea* (Gray).

DHABINI. Plumbeous Red-star, *Rhyacornis f. fuliginosus* (Vig.). The name evidently denotes the bird's predilection for *jhoras* and cascades, which the washerman visits for washing clothes.

Dhabini also denotes the Eastern Spotted Forktail, *Enicurus maculatus guttatus* (Gould), from its habit of haunting similar waterfalls and hill-streams.

CHANCHAR. Grey-winged Ouzel, *Turdus boulboul* (Lath.).

CHARCHAR. Stevens mentions this *Pahariya* name as applicable to all Blackbirds and Rock Thrushes. I find, however, that Chanchar instead of Charchar is the name exclusively used for the Grey-winged Ouzel, which is very common and familiar throughout the district and highly prized as a song bird. The Rock Thrush has a different *Pahariya* name as mentioned below.

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SUGĀNEY. Chestnut-bellied Rock Thrush, *Monticola rufiventris* (Jard. and Selby.).

KALCHURA. Evidently a corruption of Kalchara or Blackbird, a term applied to the Himalayan Whistling Thrush, *Myophonus cæruleus temminckii* (Vig.). Stevens records (*J.B.N.H.S.*, XXX, 362) 'Kholchara' for this bird.

HARINI. Verditer Blue Fly-catcher, *Eumyias t. thalassina* (Swains.).

NAKLEY-CHARA. White-throated Fantail Fly-catcher, *Leucocirca a. albicollis* (Vieill.). The name evidently signifies the antics and frolicsome disposition of the bird.

BHADRAYA. Indian Black-headed Shrike, *Lanius n. nigriceps* (Frankl.). This name is general for all Shrikes.

RANI-CHARA Minivets generally, though the Short-billed Minivet, *Pericrocotus brevirostris affinis* (Horsf.), which is very common in Darjeeling, is often denoted.

RUPI. Common Myna, *Acridotheres t. tristis* (Linn.).

BHANGERA. House-sparrow, *Passer domesticus indicus* (Jard. and Selby.).

LARCHI. The Assam Black-naped Green Wood-pecker, *Picus canus gyldenstolpei* Stuart Baker.

NAIWOOL. The great Himalayan Barbet, *Megalaima virens marshallorum* (Swin). This is a common bird in Darjeeling; seldom visible, as it hides itself among leafy boughs of tall trees in the Birch Hill and other forests but declares its presence by its loud and continuous calls.

CUCKOO. The Himalayan Cuckoo, *Cuculus optatus* (Gould).

GIDA. Vultures generally.

LHEMA GIDA. Stevens has recorded (*J.B.N.H.S.*, XXX, 874) this *Pahariya* name for the Bearded Vulture or Lemmergeyer, *Gypaëtus b. barbatus* (Storr).

HALISA. The Kokla Green Pigeon, *Sphenocercus sphenocercus* (Vig.).

HUKAS. Hodgson Imperial Pigeon, *Ducula badia insignis* (Hodgs.).

KALIJ. The Black-backed Kalij Pheasant, *Gennæus leucomelanos* (Lath).

MOUNAL. The Pahariyas bestow this name on the Crimson Horned Pheasant, *Tragopan satyra* (L.), rather than on *Lophophorus impejanus* (Lath). In the Western Himalayas, the term is applied by ornithologists to the latter bird.

SIMKUKRA. The Wood-cock, *Scolopax rusticola rusticola* (L.).

CALCUTTA,
December 12, 1930.

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Dhenkānāl Grants of Raṇastambha and Jayastambha.

By A. Banerji-Sastri.

The two copper plates edited below, belong to the Chief of Dhenḳānāl, one of the Orissa Feudatory States, lying between 21° 11′ and 20° 31′ N., and 85° 10′ and 86° 2′ E. About March 1929, the Dīwān of the State sent them over to the late Mr. E. A. Horne, then Principal of Patna College, and Honorary Secretary of the Bihar and Orissa Research Society. Mr. Horne handed them over to me with a request that I should edit them. On further inquiry, I came to know that they have been in the possession of the Chief's family for a long time, and are treated as heirlooms. No other data are available.

In plate A of Raṇastambha (Pls. 17 and 18), the inscription has been incised on both sides of a single plate of copper measuring $7'' \times 5\frac{1}{2}''$, and the letters measure $\frac{2}{5}''$ on the average. A round seal of the same metal is affixed to the left of the plate. The impression on the seal is circular and consists of a plain circle with a row of lotus petals along its circumference. The circle is divided into two unequal parts by two raised parallel lines. Just above the dividing line, are some worn-off letters evidently bearing the king's name. Below the line, is a deer couchant with a bough or some foliage in its mouth. The rest of the seal is blurred. The inscription consists of 33 lines, and records the grant of a piece of land to Bhatta Sudarśanadeva, in the village of *Tyalyaketu*, by Raṇastambhadeva from Kodāloka. The record was inscribed by one Mahokaya, and the eulogy composed by Ripubhañja Kalyānadeva.

The *characters* belong to the 9th-10th century A.C., and the *language* is fairly correct Sanskrit, with a few mistakes, pointed out in the foot-notes to the text below. It is in prose. In *orthography*, the distinction between *va* and *ba* is not always maintained.

Another grant of Raṇastambha *alias* Kulastambha is known, and has been edited twice in English and twice in Bengali :—

(1) *Epigraphia Indica*, Vol. XII, pp. 156–9.
(2) *Archæological Survey of Mayurbhanja*, Vol. I, pp. 157 ff.
(3) *Baṅger Jātīya Itihāsa, Vaiśya Kāṇḍa*, pp. 303-04.
(4) *Journal of the Baṅgīya Sāhitya Pariṣat*, Vol. XVIII, part I, pp. 59 ff.

Supposing Kulastambha to be another name of Raṇastambha, two more grants of the same king have been edited by

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Man Mohan Chakravarty in the Journal of the *Asiatic Society of Bengal*, 1895, pp. 123–27.

In plate B of Jayastambha (Pls. 19 and 20), the inscription has been incised on both sides of a single plate of copper measuring $8\frac{3}{8}'' \times 5\frac{5}{8}''$, and the letters measure $\frac{1}{4}''$ on the average. The seal, affixed in the same way as in plate A, is larger (3″) and well-preserved. The impression on the seal is circular and consists of a plain circle with a row of lotus petals along its circumference. The circle is divided into two equal parts by the line of letters (measuring $\frac{3}{8}''$) forming the king's name Śrī-Jayastambhadeva. In the upper part is a deer couchant with a bough or some foliage behind it and a crescent over its back. The lower part of the circle is occupied by an expanding lotus flower. The inscription records the grant of a piece of land to Dhirivvaraṅgati-śarmā, son of Chāsaṅgaturda, and grandson of Mandrabhūti-śarmā, in the village of Kameśirsa, in the district of Tagakula, by king Jayastambha. Four generations of the dynasty founded by the favour of *śrī-Stambheśvarī*, in the family of Śūklikaṃśa, are mentioned in the inscription :—

Kāñchanstambha.
|
Kaṇadastambha (Vikramāditya).
|
Alānastambha.
|
Jayastambha.

In *language* and *orthography*, this plate resembles plate A. The *characters* seem to be a few years later than plate A. The language, also, of 31 lines in prose, is more incorrect.

The *importance* of these two plates lies in

(*a*) correcting previous readings in the other inscriptions of the same family : e.g., 'Raṇastambha', not 'Ralastambha' as read by M. Chakravarty, *J.A.S.B.*, *ibid.*, p. 125 ; 'Kaṇadastambha', not 'Kalahastambha' as read by R. D. Banerji, *E.I.*, *ibid.*, p. 157 ;

(*b*) supplying further information about the Śūklivaṃśa dynasty by recording another line and another generation in Alānastambha and Jayastambha.

Thus, they substantially supplement the information available from the previously known inscriptions referred to above.

The readings published in *J.B.O.R.S.*, Vol. II, Part IV, necessitated a more careful and revised edition : cf. R. D. Banerji, *History of Orissa*, Vol. I, pp. 194–96.

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Dhenkānāl Plate of Raṇastambhadeva

Text

(*Plate A, First side.*)

1 Om svasti (||) Prabhūta-sukṛt=odaya-sampravṛddha-lakṣmī-
2 llavāra - nṛpa - vāhu-val=āvalopa-nirbhar - sit=ānya - pura-
3 guṇ-ā-nubhāvāt anek=ābhradhva-ja-
4 deva - kula - sudhā - dhavala - vahal=āloka - janita - sankala-
digantar=ālokāt *Kodālokāt*
4 deva - dvijāti - guru - bhakti - guṇ = opapanna - śrīmāṃ [1]-
5 pratāpa-nata-hasta-bhūbhṛt-samūhaḥsañchāra-
5 sāra-parit=ā [2] ṣaṇ[ṇ]a-kalpavṛkṣaḥ satyāśrayo ripu-val=
endhana-dīptak=āṅgaḥ para-
6 ma-māheśvaro mātā-pitṛ pād=ānudhyātaḥ samadhigata-
pañcha-mahā-śabdaḥ sama-
7 sta-mahā-sāmant=ādhipatiḥ *śrī-Raṇastambhadevaḥ* kuśalī |
Iheva-viṣaya-prati-
8 ba-ddha-Kalamyoṅga-grāme | Varttamāna-bhaviṣya- kāli [3]
norājānaka-rājaputra-mahā-
9 sāmantā sāmanta-purogāś-cha pūja [yati] yathārhaṃ
bo(dha)yati kuśalayaty=ādiśati
10 cha viditam-astu-bhavatām (||) grāmo=yam *Tyalyaketu* Tra-
varnitata=samīpaka sīmā=
11 sti [4]rna Sagdhiyo-samsakta-grāmasya pāda-śālinī-bhūmiḥ |
upari sa-
12 mvidya paśchimasyāṃ diśi Jādā-paryanta-balayībhūta-sīmā-
vinirṇṇayaṃ kṛ-
13 tvā anyatamāsv=api dikṣu yathāpūrvva-vyavasthit-ānyaka-
sīmāsthānāni cha pari-
14 kalpya | Satata-homa- svādhyāya-japa- tapo-niyama-bhavi-
tātmane ved=odita-kri-
15 yā-karaṇ=āhita mānasāya deva-dvija-gurujan=ātithi-
bandhusaparyā-samā-
16 hita - chetase | bhagavad-Gotama - gotra - sambhav=āmba -
pāya Vājasene [5]-Kāṇva-Bhṛ-
17 gvadhvāyine bhaṭṭa-*Sudarśanadevāya* Mātā-pitur=ātmanaś-
cha puṇy=ābhivṛ-
18 ddhaye āchandrārkka-vyavasthayā su-karaṇena sarvva-
bādhā-varjjitena tāmra-śasa
19 [ne]na-purvvakeṇ [6]a | Asya kula-devatā bhagavatī-
Stambheśvarī |

---

[1] Read *śrīmān-*. [2] Read *-āsanna-*. [3] Read ° *līno* °.
[4] Read ° *stīr* °. [5] Read ° *na* °. [6] Read ° *na* °.

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(*Plate A, Second side.*)

20 saśarī[ri]kāṃ sākṣātīkṛtvā[1] pratipādit-āsmābhir=yad=etad-
dānam=asmat-
21 kulajo=nyatamo vā pratipālayati tasya gotr=ābhivṛdhir=
mahad=ārjitya[ta]ṃ cha bha-
22 vati | yo=nyathā kurute tasya sarvv=āti-vichchhedo rājya-
bhraṃśatā cha | ato bhavadbhir=dharmma-
23 gaurā[2]vad=asmad-atunodhāch[3]=cha pratipālanīyam=idaṃ
| Uktaṃ=cha bhagavatā Vedavyāse-
24 na Vyāsena | samāno-yaṃ dharmmasetu[r]nṛpāṇāṃ kāle-
kāla(e) pālanīyo bhavad
25 bhiḥ | Bahubhir-vvasudhā dattā rājabhiḥ | Sagarādihhir=
yasya yasya yadā bhūmis=ta
26 sya tasya tadā phalaṃ sva-dattām para-dattām=vā yo
hared=vasudhāṃ=iha sa viṣṭhāyāṃ
27 kṛmir=bhūtvā pitṛbhiḥ saha pachyate || suvarṇṇam=ekam
gām-ekām bhumer=apy=eka-
28 m=aṅgulam hara(n) narakam=āyāti yāvad=ābhuta-saṃ-
plavaḥ[4] || Mā bhūd=aphala-sa-
29 ṅkā vaḥ para-da(t) t=eti pārthivāḥ (||) sva-dattāt-phala-
mānantyaṃ para-datt=ānupālanam (||)
30 Iti kamala-dal=āmbu-bindu-lolāṃ śriyam=anuchīntya
manuṣya-jivitaṃ = cha sakala-
31 m=idam-udāhṛtaṃ = cha budhvā na hi puruṣaiḥ para-
kīrttayo vilopyāḥ (||) *Sambat*
32 *83 Kārttika va da* (||) Likhitā praśasti Ripubhañja Kalyāna-
deveneeti Bā-
33 ṇi-putra Mahokayā[5] utkirṇ eti || iti.

Translation.

(Ll. 1–3.) Om, Hail. From *Kodāloka*,[6] which has surpassed all the worlds by the power of prosperity fully developed by rise due to manifold good activity, which has ousted the prestige and virtue of other cities by wiping them with the strength of arms of its wrestling king, which has lighted up all the quarters by producing multifarious light from the many white-washed temples with their flag-staffs in the sky,

---

[1] Read °*tya* °. [2] Read -*gauravād*=.
[3] Read =*asmadanurodhāch*=. [4] Read °*vaṃ*. [5] Read °yena.
[6] M. Chakravarty's plates read *Kodālo*: *J.A.S.B.*, vol. LXIV, p. 125. R. D. Banerji says—'The name of the country read as *Kēdāla* in those plates is very clearly written as *Kōdālō* in the Talcher plate, and this is probably the correct reading', *E.I.*, vol. XII, p. 157. R. D. Banerji is extremely careless in attributing to M. Chakravarty the reading as *Kēdāla* whereas the latter read as *Kōdēlō*. The present Dhenkānāl plate makes the reading absolutely certain, as *Kodālo-ka* (*ka* in *svārthe*) by making it rhyme with the two words ending in *—lo*, in lines 1 and 3.

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(Ll. 4–7.) the illustrious *Raṇastambhadeva*, possessing the virtue of devotion to gods, the twice-born and the preceptor, endowed with prosperity, by whose valour is lowered the hands of the assemblage of kings, the wishing-tree that is ever near and its bounty moving around, the prop of truth, whose limbs are kindled by the fuel of enemy-forces, the devout worshipper of Maheśvara, having meditated on the feet of his mother and father, having acquired the five great sounds, the overlord of all the *mahāsāmantas*, being in good health,

(Ll. 7–19.) in the *Kalamyoṅga* village, comprised in the district of *Iheva*,—honours, duly instructs, greets and orders the present and future *rājānakas*, *rājaputras*, *mahāsāmantas*, *sāmantas* and leading citizens—be it known to you (that) this village *Tyalyaketu*, near *Travarnitata*, stretching within its boundaries, is the plot of land at the foot of the village adjacent to *Sagdhiyo*; surveying from the top, making a settlement of the boundary in the form of a belt, around *Jādā* in the western direction, having also determined the other boundary spots as settled hitherto in the other directions; has, by means of the aforesaid copper-plate charter, immune from all limitations, by a good writer of legal documents, by the ordinance of the duration of the moon and the sun (been given), in order to increase the merit of my mother and father and myself, to *bhaṭṭa Sudarśanadeva*, whose heart is set upon perpetual *homa* (sacrifice), Vedic study, meditation, asceticism and regularity; whose mind was intent upon the performance of tasks ordained in the Vedas; whose heart is concentrated on looking after gods, the twice-born, superiors, guests and relatives; who looked after women, being born in the *gotra* of the venerable Gotama; who studied the Vājasenīya, Kāṇva and Bhṛgu (*śākhās*). His (the king's) family goddess is the adorable *Stambheśvarī*, whom having seen with his own eyes in a bodily form, he has installed.

(Ll. 20–23.) This gift by us, our descendant or whoever else maintains, to him shall accrue increase of *gotra* and wholly straight (path); whoever acts otherwise, to him total deprivation of everything, and loss of kingdom. So this is to be maintained by you because of respect to *dharmma*, and also my request.

(Ll. 23–31.) Land has been given by many kings, Sagara and others; to whomsoever belongs the land at that time, to him at the time the fruit (of such grant). (Continue the rest of the customary verses[1]—ending with—'The good

[1] *ā-bhūta-saṃplavaḥ* (read—*saṃplavaṃ*), 'till the annihilation of all being'. In the Ramganj Copperplate of Iśvaraghoṣa (N. G. Majumdar,

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deeds of others should not be effaced by people considering that fortune as well as human life is as unsteady as a drop of water on a lotus petal, and also realizing all that has been cited above'.

(Ll. 31–33.) Saṃvat 83 Kārttika *Vada.*[1] This eulogy has been written by *Ripubhañja Kalyānadeva.* It has been engraved by Mahokaya, son of Bāṇi. Here it ends.

Dhenkānāl Plate of Jayastambhadeva.

Text.

(*Plate B, First side.*)

1 om svasti (||) Jayanti bhujaga-bhoga-paramāṇavaḥ (||) sarvajñāḥ sarvakrid-vyāpi-Hara-pādābja-reṇa-

2 vaḥ(||) Svasti(||) Tṛ[2]bhuvana-vidite-*Śūklivaṃśe*-vaṃśabhūṣaṇo rājā āsīt || *Kāñchanastambhaḥ*

3 nija-bhuja-vajra-vivijita-durddhara-vairī[3]-vāraṇa-girīndrāj
=jātas=tato mā[4]hano nṛpatiḥ

4 śrī-Vikramāditya apara-nāmadheyaḥ śrīmāṃ[5]-*Kaṇada-stambhaḥ* tasmād=asādhāraṇa-

5 sāhas[6]ādyataḥ pratāpa-bhasmīkṛta-vaira-vigrahas-[7]tivagra-hastavagdhu-samma[8]nita sādhu-

6 [9]mmatih pṛthivyam prathito vyajāyataa (||) Durvvār-ā rikarīndra-kumbha-dalana-vyāuola-

7 muktā-pala-phal-āpāta-samudgataḥ graham=iva vyāptaṃ nabho=nekaśaḥ yēn=āneka-yu-

8 gen=a[10]-dhikṛta-vṛtaṃ-prodhṛtya-sammānita-samyakk[11]-supūrito[12]-ditya[13] yasya balah sama

9 damā (||) yasya śeṣabdhi-śubhrā[14] mās=ādyardhvaśa[15] vibhāna[16]śa-maṇ-ḍale ja[ya]dvipa[17]-chandr-āvadat-ojvalā[ḥ]

10 ādadhyā ch-ā para-nirmmala-guṇair-vāchālatāḥ śādha-vomṛtyu-nivahanā(||)karoti su

11 tarām-indro-pi yasmai syāt (||) Sakala-bhūpāla-mauli-mālālalita-charaṇa-yugalo

12 nirmmala-karavāla-kiraṇa-jāla-kālaka-bhāsurako Chāllākāye-vāsi śrī-Stambheśvarī-labdha-vara-

13 prabhāvo mahānubhāvaḥ parama-māheśvaro śrī-*Alānastambho*=bhūt (||)

Inscriptions of Bengal, p. 155, and plate line 40) occurs the word *āhūti-saṃplava.*

[1] dark fortnight of Kārttika, Saṃvat 83.
[2] Read *Tri°.* [3] Read *-vairi°.* [4] Read *mohano°.*
[5] Read *Śrīmān.* [6] Read *sāhas=odyataḥ.*
[7] Read *trivarga-hasta-bandhu-.* [8] Read *-Sammānitaḥ.*
[9] Read *sādhumatiḥ.* [10] Read *°genā °.* [11] Read *samyak°-.*
[12] Read *°tā °.* [13] Read *°āḥ °.*
[14] Read *śes=ābdhi-śubhrā.* [15] Read *mās=ādy=ardhvaśaḥ.*
[16] Read *vihāyasa-.* [17] Read *jaya-dvīpa-.*

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14 sūta[ḥ] śrī-*Jayastambha-rājā* samadhigata-pañcha-mahā-
śabdo parama-bhaṭṭārakaḥ kuṣ[1]alī maṇḍa-
15 le=smin varttamāna-bhaviṣya-mahā-sāmanta-mahā-rāja-
rājaputrān rājñī-kumār-ā mātṛ=opa-
16 rika-viṣayapati-tad-āyuktaka-daṇḍapāśika-sthān=ā-dhuri-
kān=anyān-api rāja-prasādi
17 naḥ caṭṭa-bhaṭṭa-vallabha-jātiyān || Bala-bhi[2]ta-sāmanta-
sāma-vā[3]jita-pado

(*Plate B, Second side.*)

18 pustaka-pāla-kaṇṭakāla-sādhya[4]dhikaraṇaṃ yathārham-
mānayati bodhayati sa-
19 mājñāpayati viditam=astu bhavatā[m] || Tagakula-khaṇḍe
kagta-vimūlya *Kameśirsa-*
20 grāmaḥ || [5]sasanīkṛtaḥ svatantraḥ vāryaḥ || no[6]ra-kuṭṭa-
śauṇḍik=ādi-sa-prakṛtikaḥ ||
21 yodha-chaṭṭa-ghaṭṭan=ādi-tatra-sthan=ādi-guṇy[lm]aka-
-sarvva-pīḍā-varjjito bhall=ā-śva-ni[7]-praveśo
22 eṣo bhūmichchhidr=āpi (di)-van=nyāyena chandr-ārka-
kṣita-sama-kālaṃ || mātā-pitror-ā
23 tmanaś=cha puṇy-ābhivṛddhaye Hastipada-vinirggata-
Yasāṭay=āvāśa[8]-Gaṅgā-pari
24 Śuṅga-pravara-Mandrabhūti-śarmaṇaḥ chitra-dī-kṣitasya
naptre Chāsaṅgaturda
25 chitra-dīkṣitasya putrāya Dhirivvaraṅgati-śar-maṇa (ne)
chitra-dīkṣitāya grāmo=yaṃ śā-
26 sanīkṛ taḥ chatu[9]-sīmmā-paryantaḥ-āchandrārka-kṣitiḥ
śauravā l || bhavadbhīh para-
27 pālanīyaḥ || Uktaṃ=cha dharmma-śāstre bahubhir-vasudhā
dattā rājabhiḥ Sagarā[di]bhiḥ | Yasya
28 yasya yadā bhūmis=tasya tasya tadā phalaṃ || Mā bhūd=
aphala-saṅkāvaḥ para-datt=eti pā-
29 rthivāḥ||Sva-dattāt phalam-ānantya[10]para-dattā-nupālanaṃ||
Sva-dattām-para-dattom=vā yo hareta
30 vasundharāṃ sa vī[11]ṣṭhāyāṃ kṛmir=bhūtvā pitṛbhiḥ saha
pachyate || Bahunā tu kim=uktena satye[12]-
31 vādī[13]-dam-uchyate.

TRANSLATION.

(Line 1.) Om. Hail. Victorious are the dusts of the foot-lotuses of Hara, all-knowing, all-performing and pervasive —where the atoms are of the size of the world.

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[1] Read *kuśa°*. [2] Read *bhīta-*. [3] Read *rājita-*.
[4] Read *—ā°*. [5] Read *śā°*. [6] Read *na°-*.
[7] Read *niṣpra°-*. [8] Read *=āvāsa*. [9] Read *°tus=si=mā*.
[10] Read *°yaṃ°*. [11] Read *viṣṭhā°*. [12] Read *°ya°*.
[13] Read *vādin=edam-*.

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(Ll. 2–13.) Hail. There was a king *Kāñchanastambha*,[1] an ornament of the *Śūklivaṃśa*[2] family, known in the three worlds. From him who with the thunderbolt of his own arm completely conquered the unrestrainable enemy-elephants (looking like) the kings of mountains, then was born the charming king, the illustrious *Kaṇadastambha*, bearing the other name *śrī-Vikramāditya*. From him was born he, elevated by uncommon courage, who by prowess turned to ashes hostile bodies, honoured by the friendly hand of the three castes, of pious mind, and famed on earth; soaring up to throw down the pieces of 'muktā'-(pearl-) fruits shaken by the crashing of the frontal lobes of the elephant-kings belonging to his irresistible foes; by whom was covered in many directions the horizon, like this planet; whose forces, performing pacification and chastisement, strongly upholding conduct sanctioned by many a cycle, by which was honoured and thoroughly covered the solar system; whose (forces) were shining white with the moon of his victory-lamp in the firmament of the sky in the (bright) half of the month, white as the last ocean; and grown eloquent by other pure virtues, good, they were the vehicles of death: so he does for ever, even Indra should be for him: thus was born the illustrious *Alānastambha*, with his two feet graced by the wreaths on the heads of all the kings, resplendent with the fatal multitude of rays from his spotless sword, residing at *Challakāya*, with power due to blessing obtained from the illustrious *Stambheśvarī*, the high-spirited, the devout worshipper of Maheśvara.

(Ll. 14–19.) (His) son, the illustrious king *Jayastambha*, having acquired the five great sounds, the highly worshipful person, being in good health—duly honours, instructs and orders the present and future *mahāsāmantas*, *mahārājās*, *rājaputras*, *rājñī-kumāras*, *amātyas*, *uparikas*, *viṣayapatis*, their employees, *daṇḍapāsikas*, *sthānādhurikas*, those others also dependant on the king's favour, those belonging to the class of Chaṭṭa,[3] Bhaṭṭa, and Ballabha; he with his feet adorned by the peace-offering of vassals afraid of his power,—to the *puṣtaka-pālas*, the *Kaṇṭa-kālas* and *sādhyādhikaraṇa*—in this province—

---

[1] *E.I.*, vol. XII, p. 158, *n.* 15.

[2] In the grants of Kulastambha edited by Man Mohan Chakravarty in *J.A.S.B.*, 1895, No. 2, p. 125, and by R. D. Banerji in *E.I.*, vol. XII, p. 157, is read *Śūlkī-*°.

[3] *chaṭṭa*, 'irregular soldiers', *E.I.*, vol. XI, p. 19: 'flatterer', *E.I.*, vol. XI, p. 176: 'rogue', *E.I.*, vol. IX, pp. 296, 299: 'the head of a *parganā*', Vogel, *Chamba*, pp. 130–32.

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(Ll. 19–22.) Be it known to you: in the district[1] of *Tagakula*, is the labour-free village of *Kameśirsa*; it is granted, and is to be protected as free; containing labourers, grinders, distillers, etc.; immune from all exactions by military officers, roaming of regular and irregular soldiers and others pertaining thereto[2]; not to be entered by archers and horsemen; this by the principle of *bhūmich-chhidra*[3] and so on; enduring as long as the moon, the sun and the earth;

(Ll. 23–26) in order to increase the merit of my mother, father and myself; this village bounded by its four boundaries, lasting as long as the moon, the sun and the earth, has been granted by a charter, to *Dhirivvaraṅgati-śarmā* the well-initiated, son of the well-initiated *Chāsaṅgaturda*, grandson of the well-initiated *Mandrabhūti-śarmā*, of the Suṅgapravara, residing in *Yasāṭaya*, demarcated from *Hasti-pada*: day of Saturn.

(Ll. 26–31.) Others' gift should be maintained by you. And it has been said in the *Dharmaśāstra*, (Follow four and a half of the customary verses.) Needless, indeed, to say much; it is said by the truthful.

---

[1] *khaṇḍe*, 'a section of a province': Fleet, *Corps. Ins. Ind.*, vol. III, p. 32, *n.* 7.

[2] *gulmaka*, 'an overseer or superintendent of forests', Kielhorn, *E.I.*, vol. IV, p. 253, *n.* 9: Fleet, *Corp. Ins. Ind.*, vol, III, p. 52, *n.* 4: 'a military or police officer,' Vogel, *Chamba*, p. 127: 'a custom receiver on highways', *Mahāvyutpatti*, p. 33.

[3] *bhūmichchhidra-nyāya*, 'land (*bhūmi*) unfit for cultivation (*chhidra*) *Vaijayantī*, and Kauṭilya's *Arthaśāstra* (*Ind. Ant.*, 1922, p. 77): cf. *bhūmichchhidraṅ-cha akiñchitkara-grāhyam*, 'uncultivable land is not taxable', *E.I.*, vol. XIX, p. 121, *n.* 3 (Kamauli plate of Vaidyadeva): other interpretations, *Ind. Ant*, vol. I, p. 46, *n.*, vol. IV, p. 106, *n.*; Fleet, *Corp. Ins. Ind.*, vol. III, p. 138, *n.* 2; *E.I.*, vol. XI, p. 177.

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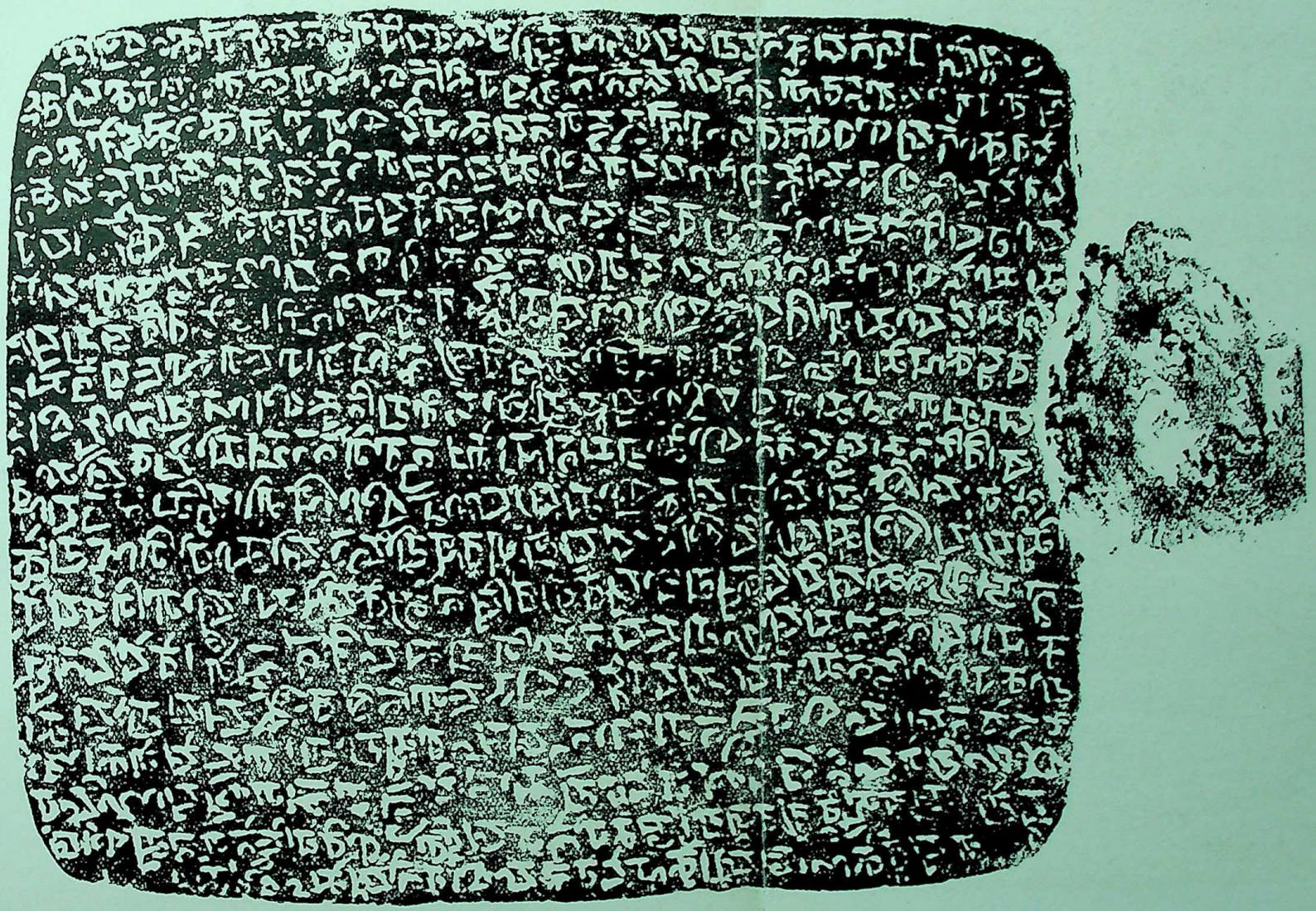

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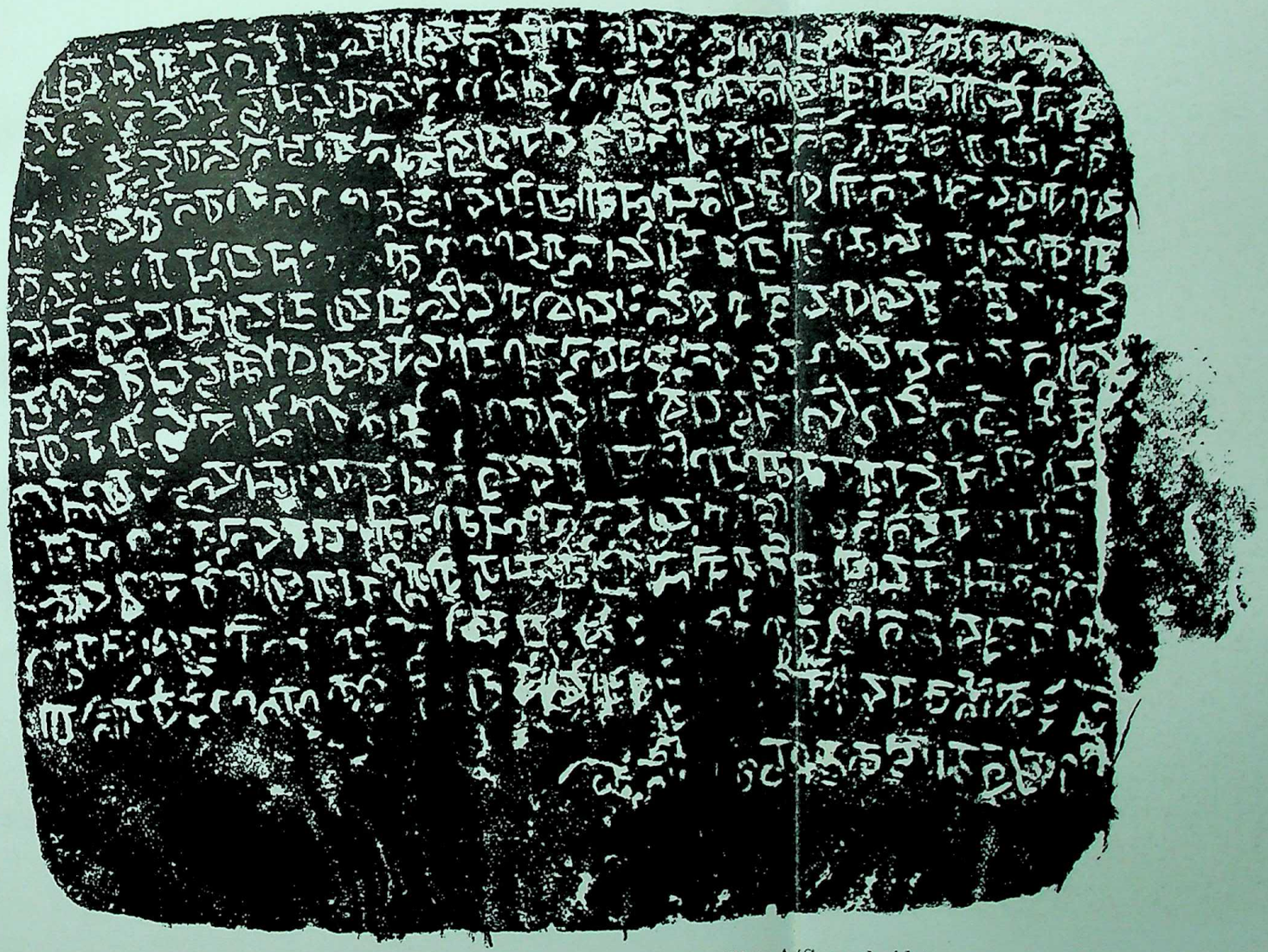

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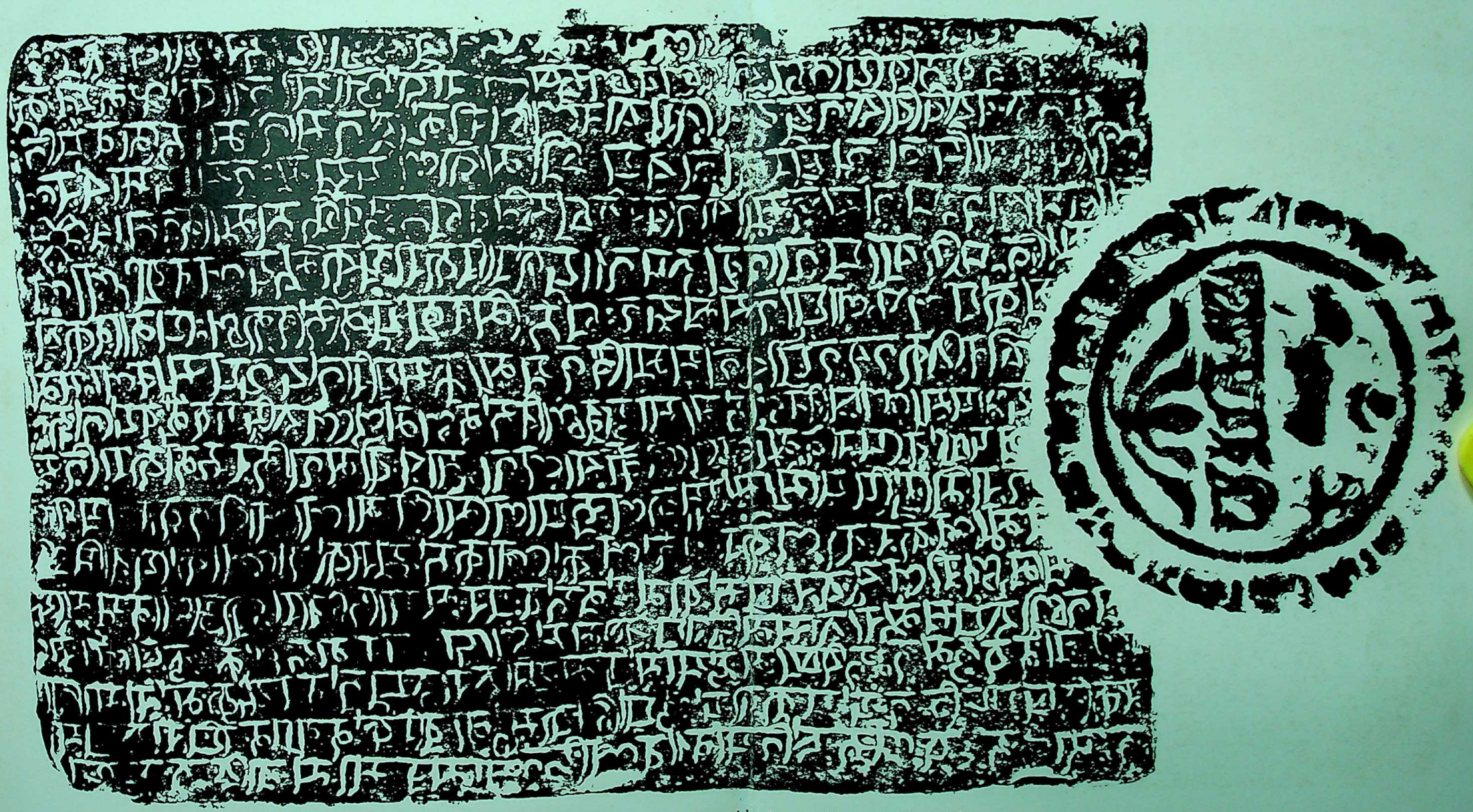

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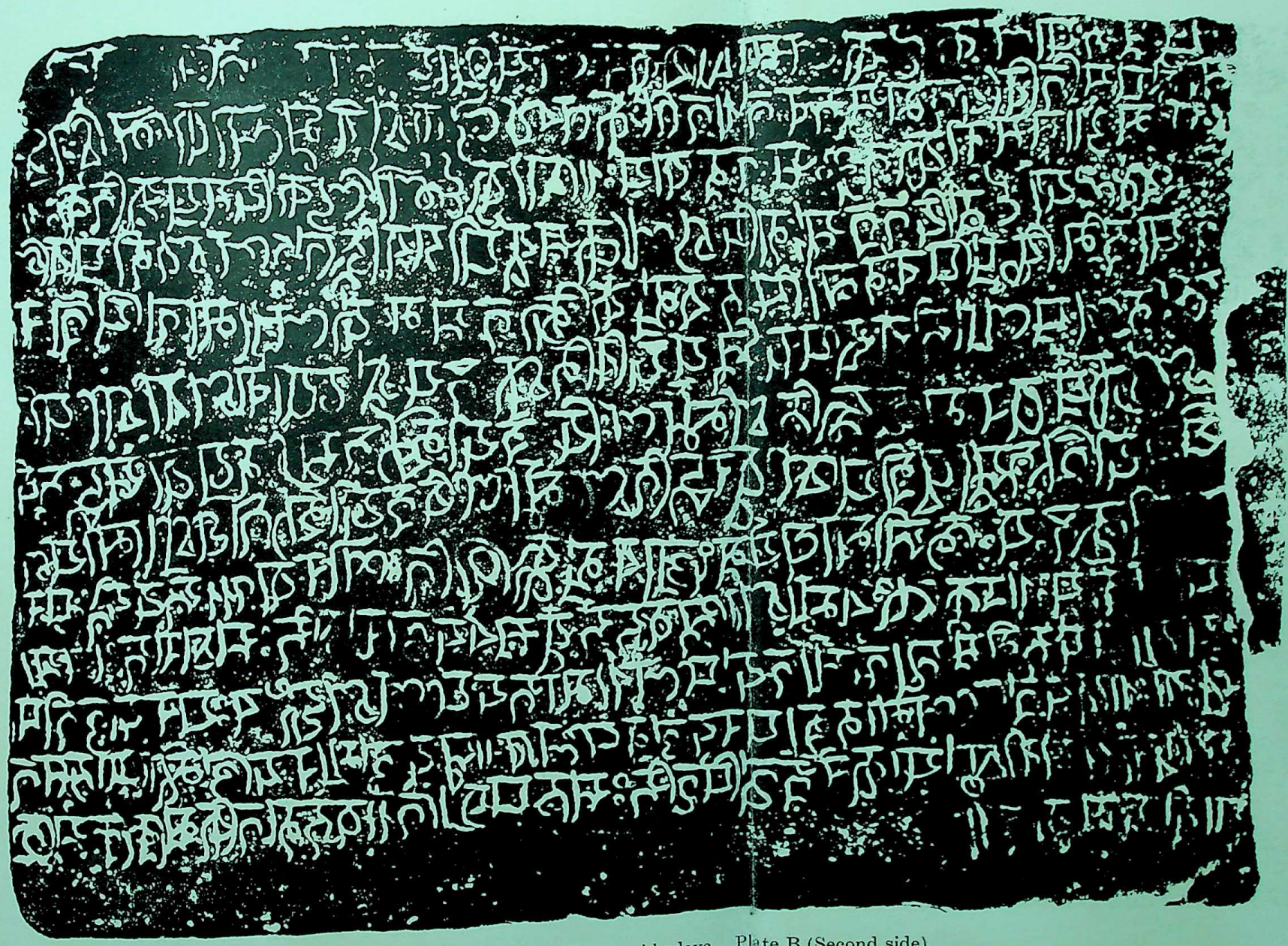

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Provenance of Early Malayan Plant Collections.

By V. NARAYANASWAMI.

[Additional Information concerning the provenance of the Malayan Collections of Sir George King, Hermann Kunstler, Father Benedetto Scortechini, and Leonard Wray, being a supplement to Sir George King's 'Materials for a Flora of the Malayan Peninsula' and Mr. H. N. Ridley's 'Flora of the Malay Peninsula'.]

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PREFACE.

If Mr. Ridley's Flora of the Malay Peninsula, published in five volumes between the years 1922 and 1925, be examined, it will be seen that a great many of the species described from materials lying in the Calcutta Herbarium are imperfectly localized. Nor were the exact localities given by Sir George King and his helpers in the Materials for a Flora of the Malayan Peninsula. Yet in regard to rare plants exact localities are necessary, and to meet the need, I have drawn up the following exhaustive compilation at the suggestion of Mr. I. H. Burkill. It becomes doubly important if it is known that a great many of the species which have been enumerated in the 'Flora' have never again been collected in the Malayan Peninsula and that Kunstler's or Scortechini's specimens are the only representatives of the species.

It is only natural that everyone should know something of the history of their collections which have been the chief materials for Mr. Ridley's flora. Therefore a brief review of the work of these earlier collectors will not be out of place in a compilation of this nature. Messrs. I. H. Burkill and H. N. Ridley have each got a short account of them in their

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books, but some details gathered from the original collections will, it is hoped, be a welcome addition to the knowledge of their activities in the Peninsula.

We may, for all practical purposes, say that the idea for a systematic collection of the plants of the Malayan Peninsula first originated from Sir George King, who in connection with cinchona visited Java and the Straits Settlements between August and December, 1879. During his journey, he visited Singapore, Johore, Penang and Province Wellesley and collected a little himself. But before returning to Calcutta, Sir George King had made arrangements with Sir Hugh Low, the British Resident at Perak, for an extensive collection in the province of Perak. It was through the influence of Sir Hugh Low, that one Hermann Kunstler, a German traveller from Australia, who was then visiting the peninsula, was engaged to collect for the Royal Botanical Gardens. Though the exact date when he entered into a contract to sell plants to the Botanic Gardens is not known, it is clear that the first batch of his botanical specimens arrived at the Gardens only in the month of April, 1881.

Reverting to Kunstler's activities prior to April, 1881, we can gather that he arrived in Singapore in June, 1880, and remained there till August when he left for the State of Perak. During his stay in Singapore, he collected on Gunong Ponti, Gunong Bintang and at Bukit Bingarang. The last locality on which he collected his No. 295 in July, 1880, at a height of 800 ft. is not found on the map, but probably it is also in Johore.

He reached Gopeng in August, 1880, which he made his headquarters till December, 1880. From Gopeng, he made expeditions to Sungei Raya, Kota Bahru and the Kinta river. His labels, though printed 'Larut', were carefully annotated with descriptive notes and localities. In January, 1881, he visited Singapore for the second time, but cut short his stay and thence reached Penang in February. Making Penang his centre of botanical activities, he paid several visits to the mainland and once to Kedah, where he botanized along the banks of the Kedah river. It was about this period that he had sufficient materials which he forwarded to Sir George King. In June, 1881, he came to Taiping and collected largely in the district of Larut (of which Taiping was the administrative centre), till June, 1882. Most of the peaks of the Larut hills were climbed by him. About May, 1882, he was collecting in a place which he wrote 'Sunki Perak'. From dates and other circumstantial evidence, I have decided to take this as the 'Sungei Larut', meaning the Larut river near Taiping. In July, 1882, he visited Selama, but returned to Taiping in August. Thereafter his botanical work was confined to the district of Larut till April, 1883. After a short stay in Penang during May, 1883, Kunstler undertook a second expedition to

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the Kinta district in June, 1883, where he collected till August. He returned to Penang in the same month and interested himself in the flora of Penang and the adjacent islands till October, when he climbed Gunong Hijou up to a height of 5,000 feet as noted on the labels by Kunstler himself. In December he returned to Taiping from Penang and for the third time visited Gopeng, Chanderiang and other places in the central Perak between March and May, 1884. He returned to Taiping in June and botanized round about Taiping till December, 1884. From the diary of his wanderings attached at the end of the preface, it will be seen that he went to Gunong Bujong Malaka (sometimes written as G.M. and mistaken for Gunong Mesah) in January, 1885, but returned to Larut in February. It also appears that he made a short visit to Gunong Bubu in March returning to Larut in April.

However, Kunstler undertook his penultimate expedition to the Eastern districts in May, 1885. He climbed Gunong Bubu in May, collected in Gunong Pondok partly in May and partly in June, crossed Batang Padang district in July, and reached Gunong Batu Puteh in August. He collected diligently here and in the adjoining district of Kinta, and *via* Gopeng, which he reached in September, he returned to Taiping in November. After this, he stayed in Taiping for some time to recoup his health and left it again to the East in February, 1886. In this, his last expedition, he crossed the borders of Perak and wandered in Northern Selangor. The dense bamboo jungles at the sources of the rivers, the Bubong, Selangor, Bera, Kal, and Kerling were all botanized by him. He was also said to have visited Ulu Slim in the Perak State during August. In September of 1886, he was seen at a place, abbreviated by him as P.P., but I consider that we can safely take it as the Pahang Path, called the Semangko Pass or the Gap, leading from Upper Selangor into Pahang. With this his botanical pursuits in the peninsula ceased and it was said he reached Australia where he died.

His abbreviations of place-names, such as G.M. for Gunong Bujong Malaka, K.D. for Kinta District, B.P.D. for Batang Padang District, C.P. for Central Perak, U.K. for Ulu Kerling, N.U.B. for near Ulu Bubong and P.P. for Pahang Path may seem puzzles, but explanations invariably followed in some of the duplicates.

Father Benedetto Scortechini, a Roman Catholic missionary, came from Australia to Taiping early in 1884. There is some discrepancy as regards the date of his first arrival in Taiping between this and that of Messrs. Burkill and Ridley. Mr. Burkill has said (p. 131[1]) that he came in 1882. But

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[1] Garden's Bulletin, Straits Settlements, Vol. IV, August, 1927.

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from his Australian collections which we have here in this herbarium, it is clear that he has been collecting in New South Wales and Queensland in 1882. Mr. Burkill tells us in a later note of his, that Scortechini went to Brisbane in 1871 as a priest for the neighbourhood, that he collected plants there and was a friend of Sir Ferdinand von Mueller and F. M. Waiky. He also adds that he left Australia early in 1884 with Tenison Woods, another priest. Mr. Ridley has said (Fl. i, p. xvi) that he came from Australia before 1884. According to his early collections in Perak, Scortechini was in Taiping only in about March, 1884. It is also clear from correspondence available here that he was appointed by Sir Hugh Low as the Government Botanist, Perak, which post he held till his death in 1886. During this period he made extensive collections both in the Larut and Kinta districts.

Excellent botanist though he was, it was unfortunate that he did not seek sufficient help in writing Malay names, and left misspellings upon his labels. In addition to this (we cannot say definitely who did them, himself or those entrusted in copying his notes) he left a great many sheets unnumbered and unlocalized, which has made it impossible to know now where certain of the species, of which Scortechini's collections alone formed the types, were collected. But as far as possible, the dates of consecutive numbers of his collections, wherever given, have helped me a great deal in fixing, approximately only, the localities for a large number of species. From the time of his arrival in Taiping in March, 1884, he devoted his attention to the flora of the Larut district, i.e. the plains around Taiping and the hills immediately over that town known in different parts as Maxwell's, Caulfield's hills and Gunong Hijou, which he wrote as G. Idjou on his tickets. These hills attain 4,000 and 4,500 ft. In May, 1884, he climbed Gunong Bubu with the Australian geologist Tenison Woods, ascending by the Hermitage and Gunong Arang Para, which he called as G. Haram Parah. In June, 1884, he is seen in or about Arang Para. In July, he visited Pangkore in the Dindings for the first time. About August, he was in a place called Ijuk which was suspected to be either Gunong Hijou or the village Ijok according to Mr. Burkill. Whenever he climbed a hill, he gave the heights and the absence in the case of Ijuk meant it was not a hill and may be only a village which he wrote Ijuk. In November, 1884, he travelled South to the Bruas river and from it he crossed over to Pangkor for the second time. But in December of 1882, he is seen in Batu Kurau to the north-west of Taiping.

His expedition to the Eastern district of Kinta was undertaken in February, 1885, and he collected extensively on Gunong Bujong Malaka, at Kuala Dipang and Blanja between March and May. A comparison of the collections of both Kunstler and Scortechini shows that they collected at different periods in

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these places and hence had no occasion to compare their notes, as may be suspected. After June, 1885, there was very little collection done by Scortechini and we may take that he was busy arranging his collections. He was deputed in October, 1886, by Sir Hugh Low to proceed to Calcutta to arrange and name his collections of Perak plants and he visited the Herbarium during November of the same year. His intention was to remain here three or four months, but unfortunately he died shortly after his arrival, bequeathing, in his last testament and will, all his botanical collections to the Herbarium of the Royal Botanical Gardens.

Leonard Wray Jr., who wrote Junior after his name, as his father also resided in the peninsula, was the superintendent of the Larut Hill garden in 1881 and the Curator of the State Museum, Taiping, from 1883–1908. He had accumulated a large collection of botanical specimens since 1887. The earlier collections of his were all made in the Eastern districts of Kinta and Batang Padang and were listed and fully localized. These reached the Herbarium of the Botanical Gardens, Calcutta, only about the end of 1888, along with the specimens collected in 1888, mostly from the coastal district of Larut. The labelling of some of his collections, i.e. those made in 1889 was defective as he recorded only 'Upper Perak 300 ft.' and failed to give the exact localities for his specimens, but it is probable that he was working near Kuala Kenering. In 1890, he explored the higher elevations of the Larut hills and we can notice a change for the better in his labels as he mentioned the localities. His second and the last batch of Perak specimens arrived at the Gardens at the end of 1890. After that he still collected but kept his collections in the Taiping Museum.

This compilation is issued as a supplement to Mr. Ridley's Flora of the Malay Peninsula and a little explanation is necessary to correctly appreciate the value of it. Certain useful information, such as the collectors for some species and localities for other species, was found missing in the flora. The collector's numbers were also missed, which, if given, would facilitate comparison of the duplicates lying in other herbaria of the world for carrying out the necessary corrections of specific names, in the light of changes in the flora. It is to supply, as far as possible, the above information, missed in the flora, and to enhance thereby the value of it to systematists, working in the Malayan Peninsula, that this work has been prepared.

The spelling of the geographical names have been corrected by Mr. Burkill and made to agree with the official ones. The manuscript has also been seen by him and valuable suggestions given in the arrangement of the main geographical divisions, beginning from Kedah in the North to Singapore in the South. I am sincerely indebted to him for all the valuable help rendered by him.

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An alphabetical index of plant names occurring in this list is also appended. At the end of each name occur two numbers, one in roman figure referring to the volume number of Ridley's Flora and the other in Arabic figure referring to page number of the same. The page number corresponding to the page number of Ridley's Flora is written at the left hand margin of each page of the supplement and read downwards.

V. Narayanaswami.

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Diary of Kunstler's Wanderings in the Malay Peninsula between 1880–1886.

1880.	June.	In Gunong Ponti, Singapore.	
	July.	In Gunong Bintang, ,,	
	August.	In Singapore.	
	,,	To Gopeng.	*First Expedition to Gopeng District.*
	September.	In Gopeng.	
	October.	In Sungei Raya.	
	November.	In Gopeng, Kota Bahru.	
	December.	Kinta river.	
1881.	January.	Singapore.	
	February.	Penang.	
	March.	,,	
	April.	,,	
	May.	Penang, Kedah.	
	June.	Larut.	
	July.	,,	
	August.	,,	
	September.	,,	
	October.	,,	
	November.	,,	
	December.	,,	
1882.	January.	Larut.	
	February.	,,	
	March.	,,	
	April.	,,	
	May.	Sunki Perak.	
	June.	Larut.	
	July.	Ulu Selama.	
	August.	Larut.	
	September.	,,	
	October.	,,	
	November.	,,	
	December.	,,	
1883.	January.	Larut.	
	February.	,,	
	March.	,,	
	April.	Penang.	
	May.	Larut.	*Second Expedition, also to Gopeng District.*
	June.	Gopeng.	
	July.	,,	
	August.	Gopeng and Penang.	
	September.	Penang.	
	October.	Larut, Top of G. Hijou.	
	November.	Penang.	
	December.	Larut.	
1884.	January.	Larut.	
	February.	,,	
	March.	Chanderiang.	*Third Expedition, also to Gopeng District.*
	April.	Gopeng.	
	May.	,,	
	June.	Larut.	
	July.	,,	
	August.	,,	
	September.	,,	
	October.	,,	
	November.	,,	
	December.	,,	

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1885.	January.	Gunong Bujong Malaka.	
	February.	Larut.	
	March.	Gunong Bubu.	
	April.	Larut.	
	May.	Gunong Bubu.	*Fourth Expedition to Gopeng and Batang Padang Districts.*
	,,	Gunong Pondok.	
	June.	,, ,,	
	July.	Batang Padang District.	
	August.	Gunong Batu Puteh.	
	September.	Gopeng, Kinta Dt.	
	October.	,,	
	November.	Taiping.	
	December.	,,	
1886.	January.	Taiping.	
	February.	,,	
	March.	Ulu Selangor.	*Fifth Expedition to Selangor and beyond.*
	,,	Ulu Kerling.	
	April.	,, ,,	
	May.	,, ,,	
	June.	Ulu Bubong.	
	July.	,, ,,	
	August.	,, ,,	
		Ulu Kal.	
		Ulu Slim.	
		Ulu Selangor.	
		Ulu Kal, N.K.L.	
		Ulu Bubong.	
	September.	,, ,,	
		P.P. or Pahang Path or Semangko Pass.	
		Ulu Kal.	

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p. 4. **Tetracera grandis,** King.

Perak: Scortechini 90 (without locality).

p. 11. **Dillenia reticulata,** Scortechini.

Perak: Kuala Dipang, Scortechini 1840.

p. 12. **Dillenia Scortechinii,** Ridl.

Syn. Wormia Scortechinii, King *and Wormia Kunstleri,* King.

Perak: Gunong Bujang Malaka, Scortechini 1864, Kunstler 5905.

p. 13. **Magnolia Maingayi,** King.

Perak: Larut within 300 ft. above sea level; Kunstler Nos. 5148 and 5526; Gunong Arang Parah, Scortechini 838; Relau Tujor, Wray 3132; Gunong Batu Puteh, Wray 1082. (Ridley quotes Kunstler for this locality, but he collected this only in Larut.)

p. 14. **Manglietia Scortechinii,** King.

Perak: Gunong Bubu, Scortechini 764.

p. 16. **Talauma Kunstleri,** King.

Perak: Wray 2826.

p. 19. **Illicium evenium,** King.

Perak: Scortechini, unlocalized.

p. 20. **Kadsura cauliflora,** Bl.

Perak: Larut, Kunstler 3077.

p. 24. **Stelechocarpus punctatus,** King.

Perak: In the dense jungles on the limestone hills of Gunong Bubu, at a height of 800–1,000 ft., Kunstler 7183.

p. 26. **Griffithia magnoliæpetala,** Maing.

? Selangor: Dense rocky jungles of P.P. at a height of 1,500–2,000 ft., Kunstler 10965. (When Kunstler wrote P.P., he evidently meant Pahang Path or the Semangko Pass, near Ulu Selangor or Kerling.)

p. 27. **Cyathostemma Wrayi,** King.

Perak: Larut, within 100 ft. of sea level, Kunstler 4207.

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p. 28. **Cyathostemma acuminatum**, King.

Perak: Upper Perak, at an elevation of 300 ft., Wray 3468.

p. 29. **Uvaria larep**, Miq.

Perak: Larut, Kunstler 4011; Taiping, Wray 1826.

Selangor: Ulu Kerling, Kunstler 8548.

p. 33. **Uvaria Scortechinii**, King.

Perak: Gunong Bujong Malaka, Scortechini 1990.

p. 34. **Uvaria asterostricta**, Miq.

Perak: Without locality, Scortechini 121.

p. 39. **Artabotrys grandifolius**, King.

Perak: Batu Kurau, Scortechini 1608; Gunong Bujong Malaka, Kunstler 7222.

Artabotrys Scortechinii, King.

Perak: Without locality, Scortechini 488.

Artabotrys pleurocarpus, Maing.

Perak: Maxwell's hill at a height of 3,000 ft., Scortechini 331 and on the road to Batu Kurau, Scortechini 1632.

p. 40. **Artabotrys venustus**, King.

Perak: Ulu Tupai, Wray 2693.

Artabotrys Wrayi, King.

Perak: Larut, Kunstler 3615; Taiping Waterfall, Wray 4001.

p. 41. **Artabotrys Lowianus**, King.

Perak: Gopeng, Scortechini 2012.

Artabotrys oxycarpus, King.

Perak: Without locality, Wray 3286.

p. 49. **Polyalthia Wrayi**, Ridl.

Syn. Unona Wrayi, King.

Perak: Gunong Bujang Malaka, dense jungles of the limestone rocks, Kunstler 7105.

? Selangor: Dense jungles, at an altitude of 2–2,500 ft. in P.P. or Pahang Path (Semangko Pass), Kunstler 10964.

p. 50. **Polyalthia Beccari**, King.

Perak: Sunki[1] Perak, in hilly localities at a height of 600–800 ft., Kunstler 3026; Gopeng, Wray 181, 495; Kunstler

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[1] Kunstler wrote on the label *Sunki Perak*, to which he sometimes added as here 'hilly localities at a height of 600–800 ft.' and

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793, 4403, 4522; Batang Padang District, Kunstler 7803; Tapa, Wray 181, 495; without locality, Scortechini 1882, 2108.

p. 54. **Polyalthia dumosa**, King.

Perak: Waterfall hill, Taiping, at a height of 1,200 ft., Wray 2678; without locality, Scortechini 601.

p. 55. **Polyalthia Kunstleri**, King.

Perak: Larut, Kunstler 3767; without locality, Scortechini 2011.

p. 56. **Polyalthia Scortechinii**, King.

Perak: Larut, Scortechini 1507; without locality, Scortechini 2064.

Selangor: Ulu Bubong, Kunstler 10010; *Pahang*: P.P. (Pahang Path), Kunstler 10975.

p. 59. **Polyalthia Hookeriana**, King.

Perak: Blanda Mabok, Wray 3944; Sungei Larut, Wray 2468.

p. 61. **Polyalthia hypogæa**, King.

Perak: Briah, Larut, Wray 4206.

Sphærocoryne aberrans, Ridl.

Syn. Polyalthia aberrans, H.f.

Perak: Gopeng, Kunstler 6136; Gunong Arang Para (Haram Para), Scortechini 718.

Selangor: Ulu Selangor, Kunstler 8631.

p. 64. **Goniothalamus tenuifolius**, King.

Perak: ? Sunki below Taiping, Kunstler 3019.

p. 65. **Goniothalamus Wrayi**, King.

Perak: Larut, Kunstler 7537.

Selangor: Ulu Kal, Kunstler 10512, 10768; Ulu Kerling, Kunstler 8758.

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sometimes did not add anything. Mr. Burkill affirms that there is no such place as 'Sunki Perak'. Mr. Burkill suggests that it may mean either Sungkai, in Perak or *Sungei Perak*, i.e. the Perak river. But it is seen from the notes on the labels for numbers 2783 to 3070 collected between February to June of 1882, that Kunstler remained in Larut district, and collected in its dense jungles at elevations varying from 300 ft.—2,000 ft. above sea level. He was not collecting in the Eastern district between these dates. Therefore it is presumed that Sunki Perak may mean in a broad sense, the stream below Taiping, where Kunstler was then working.

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p. 67. **Goniothalamus tapis**, Miq.

Perak: Asam Kumbang, Wray 2926; Blanda Mabok, Wray 3996; Kota, Taiping, Wray 2415; Gopeng, Kunstler 5882.

Goniothalamus Kunstleri, King.

Perak: Relau Tujor, Wray 2236; without locality, Scortechini 1803.

Goniothalamus Scortechinii, King.

Perak: [1] Ijuk, Scortechini 1151.

p. 68. **Goniothalamus Ridleyi**, King.

Perak: Kurau, Scortechini 1576.

Goniothalamus Curtisii, King.

Selangor: Ulu Bubong, Kunstler 10548.

p. 70. **Orophea setosa**, King.

Perak: Gunong Bujong Malaka, Kunstler 7158.

Orophea enterocarpa, Maing.

Syn. Orophea hastata, King.

Perak: Without locality, Scortechini 2189.

p. 71. **Orophea maculata**, Scort.

Perak: Sungei Larut, Wray 2469; without locality, Scortechini 106, 1771, 1785.

Orophea gracilis, King.

Perak: Without locality, Scortechini 104, 167.

p. 72. **Orophea cuneiformis**, King.

Perak: Kuala Dipang, Kunstler 8234, 8250; Kampong Kota, Wray 3338; without locality, Scortechini 1584, 1744, 1754.

Orophea dodecandra, Miq.

Perak: Kuala Dipang, Scortechini 1764.

p. 73. **Mitrephora Maingayi**, H.f. and T.

Selangor: Ulu Kerling, Kunstler 8585, 8620; Ulu Bubong, Kunstler 10420; Ulu Bera, Kunstler 10359.

Mitrephora reticulata, H.f.

Perak: Kuala Dipang, Kunstler 8238; Gunong Ijuk (? G. Hijou), Scortechini 4[a]; Batu Kurau, Scortechini 4[aa].

Selangor: P.P. (Pahang Path), Kunstler 10977.

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[1] Burkill says 'Ijuk seems to be the village in N. Perak, 32 miles from Taiping by road. We write it now Ijok. But Scortechini seems to have called the hill immediately over Taiping Gunong Ijuk instead of G. Hijou. G. Scortechinii is extremely likely to occur at Ijok.'

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p. 74. **Mitrephora macrophylla,** Oliv.

Perak: Dipang, Scortechini 1814; Kunstler 8238; Tapa, Wray 184; Gunong Bubu, Kunstler 7365; Batang Padang, Kunstler 8008; without locality, Scortechini 1864.

p. 76. **Popowia perakensis,** King.

Perak: Waterfall hill, Taiping, Wray 2055.

p. 77. **Popowia tomentosa,** Maing.

Penang: Kunstler 1510. *Selangor:* Ulu Bubong, Kunstler 10058, 10397.

p. 79. **Oxymitra affinis,** H.f.

Perak: Larut, Scortechini 1571; Kampong Kota, Wray 3339.

p. 92. **Xylopia elliptica,** Maing.

Perak: Maxwell's hill, Wray 3194.

p. 94. **Xylopia olivacea,** King.

Perak: Briah, Wray 4207; Waterfall hill, Taiping, Wray 2054; without locality, Scortechini 469.

p. 96. **Miliusa longipes,** King.

Perak: Near Gunong Bubu, Kunstler 7352; near Gunong Bujong Malaka, Kunstler 7162.

p. 100. **Kingstonia nervosa,** H.f.

Perak: Without locality, Wray 3376.

p. 106. **Coscinium Wallichianum,** Miers.

Mr. Burkill says that there is no specimen from Perak either at Kew or Singapore. It is also not represented in Sibpur Herbarium.

p. 107. **Diploclisia Kunstleri,** Diels.

Syn. Cocculus Kunstleri, King.

Perak: Gopeng, at 500–1,000 ft. height, Kunstler 4417; without locality, Wray 2993.

Selangor: Ulu Bubong, at 400–600 ft., Kunstler 10282.

p. 109. **Limacia oblonga,** Miers.

Penang: at 100 ft., Kunstler 1575. *Perak:* Taiping plain, Wray 1869; Gopeng, 300–800 ft., Kunstler 6112, 6184; without locality, Scortechini 36.

p. 116. **Barclaya Motleyi,** H.f.

Perak: Larut, Briah, Wray 4216; Gopeng, Kunstler 1055; Batang Padang District, in mountain streams, at a height

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of 300–600 ft., Kunstler 7812; without locality, Scortechini 264. *Selangor:* Ulu Bubong, in pools of water at a height of 300–500 ft., Kunstler 10158; near Ulu Bera, 500–800 ft., Kunstler 10866.

p. 120. **Roydsia parviflora,** Griff.

Province Wellesley: hanging on rocks at a height of 300–500 ft., Kunstler 1611.

p. 121. **Roydsia Scortechinii,** King.

Perak: Taiping, in dense jungles at 800–1,000 ft., Kunstler 8464; Larut, at 300–800 ft., Kunstler 4225; without locality, Scortechini.

p. 122. **Capparis Scortechinii,** King.

Perak: Hilly locality of Batang Padang, at 300–500 ft., Kunstler 8083; without locality, Scortechini 191.

Capparis perakensis, Ridl.

Perak: Kuala Dipang, Scortechini 1784.

p. 124. **Capparis cucurbitina,** King.

Selangor: Ulu Kerling, 500–700 ft., Kunstler 8824; near Ulu Bera, 500–800 ft., Kunstler 10027, 10795.

p. 125. **Cratæva macrocarpa,** Kz.

Perak: Kuala Dipang, Scortechini 1771; Kuala Kangsar, Wray 3348. *Selangor:* Ulu Bubong, in mixed bamboo jungles at 400–600 ft., Kunstler 10461.

p. 128. **Alsodeia Wallichiana,** H.f.

Penang at 300 ft., Kunstler 1562.

Perak: Rocky locality near Gunong Bubu, at 300–500 ft. high, Kunstler 7341, 7595; Kuala Dipang, Scortechini 1769.

Alsodeia Kunstleriana, King.

Perak: Larut, 300–500 ft., Kunstler 7449; Changat Jiring plain, Wray 2747; Gunong Pondok, Kunstler 7703; Gopeng, Kunstler 5891.

p. 129. **Alsodeia dasycaula,** Miq.

Syn. Alsodeia membranacea, King.

Perak: Without locality, Scortechini 645.

Alsodeia Wrayi, King.

Perak: Larut, 500–1,000 ft., Kunstler 3199, 3449, 5592; Gopeng, Kunstler 4347; without locality, Wray 2848, Scortechini 1406.

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p. 131. **Alsodeia pachycarpa**, King.

Perak: Kenering, Wray 564.

Selangor: Ulu Bera, in dense bamboo forests, 400–600 ft., Kunstler 10235.

Alsodeia Scortechinii, King.

Perak: Selama, Scortechini 1113, Kunstler 3115; Sungie Larut plains, Wray 2294; Tupai, Wray 2339; Larut, open rocky jungles, Kunstler 2322, 2478.

p. 143. **Xanthophyllum Scortechinii**, King.

Perak: Without locality, Scortechini 2079.

Xanthophyllum affine, Korth.

Perak: Simpang near Taiping, Wray 2245; Sungei Larut plain, Wray 2366; Tapah, Wray 1390; Gunong Batu Puteh, Wray 1106, 1224.

p. 148. **Xanthophyllum Wrayi**, King.

Penang, 100–300 ft., Kunstler 1489.

Perak: Larut, within 300 ft., Kunstler 2770, 3282, 6512; Kota plain near Taiping, Wray 2544; near Gunong Bubu, 500–800 ft., Kunstler 7396, 7701; Kuala Dipang, Scortechini 1743; Tapah, Wray 185, 1396.

Selangor: Ulu Kerling, 400–600 ft., Kunstler 8588, 8605.

p. 157. **Erythrospermum Scortechinii**, King.

Perak: Without locality, Scortechini 507.

p. 159. **Hydnocarpus nana**, King.

Perak: Waterfall hill, Taiping, Wray 2060; Larut, 200–500 ft., Kunstler 3721, Scortechini 38, 1570; Kota plain near Taiping, Wray 2550; Gopeng, Kunstler 487, 5828; Upper Perak, 300 ft., Wray 3623.

p. 162. **Taraktogenos Scortechinii**, King.

Perak: Gunong Bujong Malaka, Scortechini 853; Gunong Batu Puteh, Wray 1169.

Taraktogenos Scortechinii, King. var. gracilipes.

Perak: Gunong Bujong Malaka, Scortechini 1894.

Taraktogenos Kunstleri, King.

Perak: Gopeng, 200–300 ft., Kunstler 8183; Upper Perak, 300 ft., Wray 3389.

p. 164. **Ryparosa Wrayi**, King.

Perak: Selama, Kunstler 3103; Larut, 100–500 ft., Kunstler 6642, 7144; without locality, Scortechini 64.

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p. 169. **Garcinia euginæfolia,** Wall.

Perak: Gopeng, 500–800 ft., Kunstler 5954; Gunong Batu Puteh, at 3,400 ft., Wray 461.

Selangor: Ulu Kerling, 500–600 ft., Kunstler 8604.

Garcinia rostrata, Hassk.

Perak: Taiping, Kunstler 8486; Gunong Arang Para, Scortechini 1962; Gopeng, Kunstler 6091.

Selangor: Ulu Bubong, 300–500 ft., Kunstler 10033, 10590; Ulu Kal, 1,000–1,500 ft., Kunstler 10762; Ulu Kerling, Kunstler 8762.

p. 171. **Garcinia diversifolia,** King.

Perak: Larut hills, Kunstler 6920.

Garcinia Hombroniana, Pierre.

Syn. Garcinia opaca, King.

Perak: Gunong Bujong Malaka, 3,500–4,000 ft., Kunstler 7232.

Selangor: P.P. (Pahang Path, below Bukit Fraser), 1,500–2,000 ft., Kunstler 10958.

p. 177. **Garcinia Kunstleri,** King.

Perak: Larut, 300–500 ft., Kunstler 2218; Taiping, 300–500 ft., Kunstler 8302, Batu Kurau, Scortechini 1588.

Selangor: Ulu Bubong, dense bamboo forests, 400–600 ft., Kunstler 10208.

p. 178. **Garcinia urophylla,** Scort.

Perak: Larut[1] garden, Scortechini 52.

p. 185. **Calophyllum canum,** H.f.

Perak: Larut, within 100 ft., Kunstler 5420; on Gunong Bubu range, 800–1,500 ft., Kunstler 7704; without locality, Scortechini 2044, 2078.

p. 189. **Kayea racemosa,** Planch. and Triana.

Perak: Without locality, Scortechini 97.

p. 191. **Kayea caudata,** King.

Perak: Batang Padang District, 300–600 ft., Kunstler 7937.

Kayea elegans, King.

Perak: On Gunong Bubu, 1,500–2,000 ft., Kunstler 7346 (Non Wray).

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[1] Mr. Burkill suggests Tea garden over Taiping.

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p. 192. **Mesua lepidota**, T. And.

Perak: Without locality, Scortechini 183.

p. 193. **Anneslea crassipes**, H.f.

Perak: Gunong Inas, 5,000 ft., Wray 4135; Gunong Bubu, 5,000–5,300 ft., Kunstler 7322; without locality, Scortechini 1902.

p. 195. **Adinandra macrantha**, Teysm.

Perak: Larut, near water at 300–500 ft., Kunstler 3713; without locality, Scortechini 2031.

Adinandra maculosa, T. And.

Perak: Gunong Arang Para, Scortechini 582; without locality, Scortechini 519.

p. 196. **Adinandra villosa**, Choisy.

Perak: Larut, 1,800–4,000 ft., Kunstler 2092, 6256.

Adinandra integerrima, T. And.

Perak: Ulu Kenas on northern slopes of Gunong Bubu, Scortechini 745; without locality, Scortechini 386.

p. 198. **Ternstrœmia Scortechinii**, King.

Perak: Gopeng, Scortechini 1953.

p. 201. **Pyrenaria Kunstleri**, King.

Perak: Larut, within 300 ft. in low marshy ground, Kunstler 3948 and in dense open jungles at a height of 500–2,000 ft., Kunstler 3815; Maxwell's hill, Wray 3241; Gunong Arang Para, Scortechini 634.

p. 203. **Gordonia imbricata**, King.

Perak: Top of Gunong Batu Puteh, 6,000 ft., Wray 883; without locality, Scortechini 402.

Gordonia multinervis, King.

Perak: Without locality but probably Gopeng, Scortechini 1918; unlocalized, Scortechini 73.

p. 204. **Gordonia Maingayi**, Dyer.

Perak: Upper Perak without locality, at 300 ft., Wray 3766; Gopeng, Scortechini 1982.

Gordonia Scortechinii, King.

Perak: Without locality, Scortechini 362.

p. 214. **Dipterocarpus Duperreanus**, Pierre.

Syn. Dipterocarpus Scortechinii, King.

Perak: Gopeng, Scortechini 1831.

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Dipterocarpus crinitus, Dyer.

Perak: Gopeng, Scortechini 1955.

p. 216. **Dipterocarpus fagineus**, Vesque.

Perak: Larut, 500–1,000 ft., Kunstler 3527; Scortechini 1478.

Dipterocarpus oblongifolius, Bl.

Perak: Scortechini's sheets are both unnumbered and unlocalized.

Dipterocarpus grandiflorus, Blanco.

Perak: Waterfall hill, Taiping, 400 ft., Wray 4057; without locality, Scortechini 152.

p. 217. **Dipterocarpus Kunstleri**, King.

Perak: Larut, 300–500 ft., Kunstler 3798; near Gunong Pondok, 300–800 ft., Kunstler 7508; Gunong Bubu range, 500–800 ft., Kunstler 7606.

p. 222. **Shorea leprosula**, Miq.

Syn. Shorea moranti, Burck.

Perak: Gopeng, Kunstler 796; Sungei Raya, Kunstler 880.

p. 223. **Shorea Curtisii**, King.

Perak: Gopeng, 300–500 ft., Kunstler 8143.

p. 224. **Shorea parvifolia**, Dyer.

Perak: Arang Para, Scortechini 859; Gopeng, Scortechini 1965; Tapah, Wray 1282.

p. 225. **Shorea acuminata**, Dyer.

Perak: Batang Padang District, 400–600 ft., Kunstler 8009.

p. 229. **Shorea bracteolata**, Dyer.

Perak: Gunong Bubu range, 500–800 ft., Kunstler 7582, 7583, 7591, 7717; Gopeng, Scortechini 1939.

p. 242. **Synaptea perakensis**, Ridl.

Syn. Vatica perakensis, King.

Perak: Waterfall hill, Taiping, 300 ft., Wray 2264; Larut, 800–1,500 ft., Kunstler 3432, 3612, 3688, 3702, 7473, 7549.

p. 244. **Vatica Scortechinii**, Ridl.

Syn. Retinodendron Scortechinii, King.

Perak: Larut, Scortechini 2; Gopeng, Scortechini 1940.

p. 263. **Durio Lowianus**, Scort.

Perak: Gopeng, Scortechini 1967.

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p. 264. **Durio macrophyllus,** Ridl.

Syn. D. testudinarum var. macrophylla, King.

Perak: Upper Perak, without locality, at 300 ft., Wray 3397; Gunong Pondok, 300–500 ft., Kunstler 7497.

Durio Wrayi, King.

Perak: Upper Perak, Wray 3684.

p. 265. **Neesia synandra,** Mast.

Perak: Sungei Larut, plain, Wray 2271; Gopeng, Scortechini 1831, Kunstler 5768, 6051.

p. 266. **Cœlostegia Griffithii,** Bth.

Perak: Gunong Bujong Malaka, Scortechini 1562.

p. 268. **Sterculia macrophylla,** Vent.

Perak: Gopeng, 300–500 ft., Kunstler 6052; near Batang Padang river, 200–300 ft., Kunstler 7923; without locality, Scortechini 430.

p. 269. **Sterculia hyposticta,** Miq.

Perak: Larut, 1,000–1,500 ft., Kunstler 3269, 4952; Gunong Batu Puteh, 3,400 ft., Wray 920, 1149.

p. 270. **Sterculia Kunstleri,** King.

Perak: Dense jungles on banks of Kinta river, Kunstler 7211; without locality, Scortechini 1805.

p. 271. **Sterculia Scortechinii,** King.

Perak: Gopeng, Scortechini 2068, 2068[a].

p. 275. **Scaphium linearicarpum,** Ridl.

Syn. Sterculia linearicarpa, Mast.

Perak: Gunong Pondok, 500–800 ft., Kunstler 7711; dense hilly jungles of the Batang Padang District, at a height of 300–600 ft., Kunstler 7843; without locality, Scortechini 2030.

Scaphium affine, Ridl.

Syn. Sterculia affinis, Masters and *Sterculia scaphigera*, King (partly).

Perak: Larut, 300 ft., Kunstler 3363; Gunong Bubu, 500–800 ft., Kunstler 7707; without locality, Scort. 2087.

p. 276. **Scaphium longiflorum,** Ridl.

Perak: Gopeng, Scortechini 2026, 2072, 2077.

Pterocymbium javanicum, R.Br.

Syn. Sterculia campanulata, Wall.

Perak: Kuala Dipang, Scortechini 1756.

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p. 277. **Erythropsis fulgens,** Ridl.

Syn. Sterculia fulgens, Wall.

Perak: Scortechini unlocalized.

Selangor: Open jungles near Ulu Kerling, 500–800 ft. high, Kunstler 8673.

p. 287. **Byttneria Curtisii,** Oliv.

Perak: Sungei Larut, plains, Wray 2293; Gopeng, Scortechini 1445[a].

p. 292. **Brownlowia macrophylla,** King.

Perak: Kota Bahru in the Kinta Valley, Scortechini.

Brownlowia Scortechinii, King.

Perak: Gunong Bujong Malaka, Scortechini 1918.

p. 293. **Pentace triptera,** Mast.

Perak: Gopeng, Scortechini 2080.

p. 297. **Pentace Scortechinii,** King.

Perak: Larut, Scortechini 119[b].

Pentace macrophylla, King.

Perak: Larut, in open rocky jungles near water, at a height of 300–800 ft., Kunstler 3405, 3577, 6660; Waterfall hill, Taiping, Wray 1737; without locality and number, Scortechini.

p. 298. **Scortechinia Mastersii,** King.

Perak: Taiping, Scortechinii 73.

p. 300. **Grewia latifolia,** Mast.

Perak: Selama, 300–500 ft., Kunstler 3129; Gunong Chabang, Scortechini 195; Batang Padang District, 400–600 ft., Kunstler 7762, 7950.

Selangor: Ulu Bubong, 400–600 ft., Kunstler 10177; Ulu Kal, 800–1,000 ft., Kunstler 10429.

p. 301. **Grewia fibrocarpa,** Mast.

Perak: Batu Togoh, Wray 2076; without locality, Scortechini 223, 1732 (? Kuala Dipang).

p. 302. **Grewia globulifera,** Mast.

Perak: Upper Perak, 300 ft., Wray 3779 and Dindings, Bruas river, Scortechini 66, 835.

Grewia antidesmæfolia, King var. hirsuta King.

Perak: Relau Tujor, Wray 1810; Tapah, Wray 199.

Selangor: Ulu Kerling, 400–600 ft., Kunstler 8786.

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Grewia Miqueliana, Kurz.

Perak: Waterfall hill, Taiping, Wray 4039 (Non Kunstler); near Taiping, Scortechini 479; Gopeng, 500–800 ft., Kunstler 6120.

Selangor: Ulu Bera, 500–600 ft., Kunstler 1080.

p. 303. **Grewia florida,** Miq.

Syn. Grewia laurifolia, Mast.

Penang, 300 ft., Kunstler 1523.

Perak: Gopeng, Scortechini 1935.

p. 310. **Elæocarpus Ganitrus,** Roxb.

Perak: ? Sunki Perak (Sungei Larut), grows near water, overhanging the river, Kunstler 3035; Gopeng, Scortechini 2000.

Selangor: Ulu Bubong, 500–700 ft., Kunstler 10102, 10314, 10450.

Elæocarpus parvifolius, Wall.

Perak: Selama, Scortechini 1121; Gunong Bujong Malaka, Scortechini 1880; Batang Padang, 500–600 ft., Kunstler 8005.

Selangor: Ulu Bubong, 500–800 ft., Kunstler 10465, 11023.

p. 311. **Elæocarpus stipularis,** Bl.

Perak: Ijuk, Scortechini unnumbered; Kurau, Scortechini 1633; Sungei Larut plain, Wray 2350; Gopeng, Scortechini 1991.

Selangor: Ulu Kal, 800–1,000 ft., Kunstler 10786.

p. 312. **Elæocarpus Wrayi,** King.

Perak: Maxwell's hill, Scortechini 400; Gunong Bubu, 5,000 ft., Wray 3857.

p. 313. **Elæocarpus floribundus,** Bl.

Perak: Larut, Kunstler 3541.

p. 315. **Elæocarpus petiolatus,** Wall.

Penang: 500–1,000 ft., Kunstler 4904, 4907

Perak: Simpang plain near Taiping, Wray 2309; Taiping plain, Wray 3396; Larut, Scortechini 1470; without locality, Scortechini 240; Gunong Batu Puteh, Wray 1223.

Selangor: Ulu Kerling, 500–800 ft., Kunstler 8793; Ulu Bubong, 400–600 ft., Kunstler 10100, 10477.

Elæocarpus paniculatus, Wall.

Perak: Larut, Kunstler 3580, 5308, 6215, and Scortechini 1681; Tapah, Wray 1335.

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Selangor: Ulu Bera, Kunstler 10032.

Singapore: Bukit Timah, Kunstler 287.

p. 316. **Elæocarpus Griffithii**, Mast.

Perak: Larut, Kunstler 2465, 6572; Gopeng, within 500 ft., Kunstler 4378, 4684, 6139.

Elæocarpus Hullettii, King.

Penang: Sides of hills at about 1,000 ft., Kunstler 1475.

Perak: Larut, 300–500 ft., Kunstler 3412; Gunong Arang Para, Scortechini.

Elæocarpus pedunculatus, Wall.

Perak: Larut, near water at 1,000–1,500 ft., Kunstler 6907.

Selangor: Ulu Bubong, 700–900 ft., Kunstler 10831.

p. 318. **Elæocarpus rugosus**, Roxb.

Syn. Elæocarpus apiculatus, Mast.

Perak: Gunong Ijuk, Scortechini 1252; Gunong Bubu, 500–800 ft., Kunstler 8328; Batang Padang District, 400-600 ft., Kunstler 8108.

Selangor: Ulu Bera, 500–800 ft., Kunstler 10791.

p. 319. **Elæocarpus Mastersii**, King.

Perak: Larut, Kunstler 2334, 2367, 2591, 5157; Maxwell's hill, Wray 1672; Gunong Bubu, Wray 3822, 3897.

p. 329. **Brachylophon Curtisii**, Oliv.

Syn. Brachylophon Scortechinii, King.

Perak: Kurau, Scortechini 1673; Ayer Kenering, plains, Wray 4266; Larut, 300–1,000 ft., Kunstler 2024, 2181, 6472; Kota near Taiping, Wray 1951.

p. 344. **Evodia pilulifera**, King.

Perak: Maxwell's hill, Scortechini, Larut hills, 2,500–3,000 ft., Kunstler 6275.

Evodia pachyphylla, King.

Pahang: Gunong Beremban, 7,000 ft., Wray 1571.

p. 348. **Acronychia Porteri**, H.f.

Penang: Pulau Jerajak, within 100 ft., Kunstler 4928.

Perak: Taiping, Scortechini 36; Larut, 300–800 ft., Kunstler 3979, 7469; Gunong Bubu, 1,000–1,500 ft., Kunstler 8338; Gopeng 500–1,000 ft., Kunstler 4482; Gunong Arang Para, Scortechini 686.

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p. 356. **Paramignya longispina**, H.f.

Perak: Matang, Scortechini 1101.

p. 361. **Picrasma javanica**, Bl.

Perak: Gopeng, Kunstler 6176.

p. 370. **Canarium caudatum**, King.

Perak: Taiping, Scortechini 454; Gopeng, 500–800 ft., Kunstler 4315.

Canarium purpurascens, Benn.

Perak: Gopeng, 300–500 ft., Kunstler 6181; Batang Padang District, 300–500 ft., Kunstler 7885.

p. 372. **Canarium pilosum**, Benn.

Perak: Maxwell's hill, Scortechini 424.

Canarium rufum, Benn.

Perak: Tapah, Wray 1434.

Selangor: Ulu Bubong, 400–600 ft., Kunstler 10601.

p. 376. **Santiria floribunda**, King.

Selangor: Ulu Bubong, Kunstler 10151, 10927; Ulu Bera, 400–600 ft., Kunstler 10448.

p. 377. **Santiria fasciculata**, Benn.

Perak: Selama, 500–600 ft, Kunstler 3123; Larut, 300–500 ft., Kunstler 3500, 6610; Gopeng, Scortechini 1988.

p. 378. **Santiria apiculata**, Benn.

Perak: Blanja Mabak, Scortechini 1701.

Selangor: Ulu Kerling, 400–600 ft., Kunstler 10688; Ulu Bubong, 400–600 ft., Kunstler 10688; Ulu Kal, 400–600 ft., Kunstler 10726.

p. 379. **Santiria Wrayi**, King.

Perak: Tapah, Wray 1423; Gopeng, Scortechini 2095.

p. 386. **Megaphyllæa perakensis**, Hemsl.

Perak: Larut, Scortechini 9.

p. 387. **Chisochæton spicatus**, Hiern.

Penang, at 1,500 ft., Kunstler 1746.

Perak: Larut, Scortechini 116; Gunong Arang Para, 716.

Chisochæton pauciflorus, King.

Perak: Tupai, Larut plain, Wray 2681; Taiping, Scortechini 94, 199.; Gopeng, 500–800 ft., Kunstler 4455.

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p. 388. **Chisochæton penduliflorus**, Planch.

Perak: Blanja Mabok, 100 ft., Wray 146; Ulu Selama, Scortechini 1302; Taiping, Scortechini 484; Gopeng, Kunstler 522, 4502, 6272; Chanderiang, 300–800 ft., Kunstler 5644.

p. 389. **Chisochæton rubiginosus**, King.

Perak: Larut, Scortechini 1543, Kunstler 3946, 5095, 5343; Sungei Larut, plains, Wray 2352.

Chisochæton macrothyrsus, King.

Perak: Larut, 2,000-3,200 ft., Kunstler 2634; Relau Tujor, Wray 1797; without locality, Scortechini 82, 433.

p. 390. **Chisochæton laxiflorus**, King.

Perak: Maxwell's hill, Scortechini 388; Batang Padang District, 300–500 ft., Kunstler 7783.

p. 391. **Dysoxylum arborescens**, Miq.

Perak: Larut, Scortechini 1515; Taiping, Scortechini 145, 208; Batang Padang District, 300–600 ft., Kunstler 7838.

Selangor: Ulu Bera, 400–600 ft., Kunstler 10387.

p. 392. **Dysoxylum dumosum**, King.

Perak: Gopeng, 300–500 ft., Kunstler 5892, 6144.

Selangor: Ulu Kerling, 300–700 ft., Kunstler 8612, 8827; Ulu Bubong, 400–600 ft., Kunstler 10329, 10912; Ulu Kal, 400–600 ft., Kunstler 10728.

p. 393. **Dysoxylum acutangulum**, Miq.

Dindings: Pangkor, Scortechini 1048.

p. 394. **Dysoxylum costulatum**, Miq.

Perak: Relau Tujor, Wray 2232; Gopeng, 300–500 ft., Kunstler 6019; Batang Padang District, 500–800 ft., Kunstler 7909.

Dysoxylum macrothyrsum, Miq.

Perak: Assam Kumbang, Wray 3072.

p. 396. **Dysoxylum cauliflorum**, Hiern.

Perak: Gunong Batu Puteh, 3,400 ft., Wray 1007.

Selangor: Ulu Slim, 400–600 ft., Kunstler 10872; P.P. (Pahang Path), 1,500–2,000 ft., Kunstler 10956.

Dysoxylum densiflorum, Miq.

Perak: Maxwell's hill, 3,300 ft., Wray 4232; Larut, 500–800 ft., Kunstler 4934.

Selangor: Ulu Kerling, 300–700 ft., Kunstler 8826.

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p. 399. **Amoora rubescens**, Hiern.

Perak: Sungei Larut plains, Wray 2349.

p. 400. **Aphanomixis sumatrana**, Ridl.

Syn. Amoora sumatrana, Miq.

Perak: Gunong Ijuk, (? G. Hijou), Scortechini 1230, 1253; Waterfall hill, Wray 2216; Larut, 300–800 ft., Kunstler 2535, 2819; Gunong Arang Para, Scortechini 652.

p. 403. **Aglaia leucophylla**, King.

Perak: Assam Kumbang, Wray 2935; Larut, 100 ft., Kunstler 1874, 2998, 6494.

Aglaia Scortechinii, King.

Perak: Without locality and number, Scortechini.

p. 404. **Aglaia glabriflora**, Hiern.

Perak: Caulfield's hill, Scortechini 482.

Selangor: Ulu Slim, Kunstler 10724.

Aglaia odoratissima, Bl.

Perak: Tupai, plain, Wray 2440; Waterfall, 300 ft., Wray 2664; Maxwell's hill, Scortechini 299; Gopeng, 500–800 ft., Kunstler 6067; Ulu Slim, 500–800 ft., Kunstler 10671, N.K.L., 500–800 ft., Kunstler 10710.

Selangor: Ulu Bubong, 300–500 ft., Kunstler 10032, 10243.

p. 405. **Aglaia argentea**, Bl.

Perak: Selama, 300 ft., Kunstler 3195; Gunong Ijuk (? G. Hijou), Scortechini 1233; Kuala Dipang, Kunstler 8239.

Aglaia argentea, var. eximia, Miq.

Perak: Selama, Kunstler 3135; Larut, in open jungles, Kunstler 7748; Chanderiang, Kunstler 5767.

Selangor: Ulu Bubong, 400–600 ft., Kunstler 10007.

p. 406. **Aglaia Forbesii**, King.

Perak: Maxwell's hill, Scortechini 264; Gopeng, 500–890 ft., Kunstler 4762, 6080.

Selangor: Ulu Kal, 1,000–1,500 ft., Kunstler 10787.

p. 407. **Aglaia lanuginosa**, King.

Perak: Larut, Scortechini 1682.

Aglaia trichostemon, C.DC.

Perak: Larut, in open jungles at 500–800 ft. height, Kunstler 5597; Gopeng, in dense jungles at 500–800 ft., Kunstler 5901.

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Aglaia humilis, King.

Perak: Upper Perak, 1,000 ft., Wray 3763.

Selangor: Ulu Selangor, Kunstler 3619.

p. 408. **Aglaia Hiernii**, King.

Perak: Larut, within 100 ft., Kunstler 6706.

Selangor: Ulu Bera, 400–600 ft., Kunstler 10877.

p. 409. **Aglaia cordata**, Hiern.

Perak: Larut, 2,000–2,500 ft., Kunstler 5071, 6360.

Aglaia palembanica, Miq.

Penang at 1,000–1,500 ft. height, Kunstler 1790.

Perak: Briah, Larut, Wray 4196; Larut, 800–1,000 ft., Kunstler, 3882, 3884, 3885; Sungei, Larut plain, Wray 2485; Relau Tujor, Wray 1783, 2153, 2614; Batu Gajah, Scortechini 1733.

Selangor: Ulu Kerling, 400–600 ft., Kunstler 8830.

Aglaia Griffithii, King.

Perak: Larut, 3,000-4,000 ft., Kunstler 4231, 6282, 6341, 6346, 6887; Waterfall hill, Taiping, 1,000 ft., Wray 2224; Gopeng, Scortechini 2058.

Selangor: Ulu Bubong, 700–900 ft., Kunstler 10285, 10925; P.P. (Pahang Path), 1,500–2,000 ft., Kunstler 10957.

p. 412. **Walsura multijuga**, King.

Perak: Taiping, 1,000–1,500 ft., Kunstler 8400; Taiping, plain, Wray 2113; Larut, within 100 ft., Kunstler 3446, 5473, 6915; Waterfall hill, Taiping, 300 ft., Wray 1859, 2565, 4183; Larut, Scortechini 1569; Maxwell's hill, Scortechini 452; Gopeng, 500–800 ft., Kunstler 4589.

Selangor: Ulu Bubong, 500–700 ft., Kunstler 10622; Ulu Kal, 400-600 ft., Kunstler 10488; Ulu Bera, 500–800 ft., Kunstler 10798.

Walsura neurodes, Hiern.

Perak: Upper Perak, 300 ft., Wray 3798.

p. 414. **Carapa obovata**, Bl.

Perak: Matang, coast, Wray 2712 A.

Dindings: Pangkor, Scortechini 960.

p. 417. **Chailletia laurocerasus**, Planch.

Perak: Blanda Mabok, plains, Wray 3980, 3981; Gopeng, 500-800 ft., Kunstler 6056.

p. 418. **Chailletia Hookeri**, King.

Perak: Ulu Selama, Scortechini 1282.

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Chailletia deflexifolia, Turcz. var. tomentosa.

Perak: Larut, Scortechini 1654, Kunstler 2054, 3869, 5032, 5033, 5345, 5501, 6677; Sungei Raya, Kunstler 944.

p. 423. **Ctenolophon parvifolius,** Oliv.

Perak: Upper Perak, 1,000 ft., Wray 3791: Gunong Bujong Malaka, Scortechini 1894.

p. 426. **Platea latifolia,** Bl.

Penang: 1,000 ft., Kunstler 1302.

Perak: Taiping, 3,000–3,500 ft., Kunstler 5885, 8321.

p. 427. **Gomphandra nyssifolia,** King.

Perak: Top of Larut hills, Kunstler 3822, 6406, 6984; without locality, Scortechini.

p. 428. **Gomphandra lanceolata,** King.

Perak: Gunong Inas, 5,000 ft., Wray 4118; Larut, 3,000–3,500 ft., Kunstler 2430, 4242; Maxwell's hills, 3,000 ft., Scortechini 376; Gunong Bubu, 5,000 ft., Wray 3864; Gunong Batu Puteh, 4,500 ft., Wray 261, 414.

Selangor: Ulu Bubong, Kunstler 10207, 10469; Ulu Kal, Kunstler 10347.

Gomphandra lanceolata var. triplinervis.

Perak: Without locality, Scortechini.

Gomphandra lanceolata var. angustifolia.

Perak: Larut, 500–1,000 ft., Kunstler 4211; Gopeng, 500–1,000 ft., Kunstler 4732.

p. 429. **Gomphandra gracilis,** King.

Perak: Larut, 3,000–3,500 ft., Kunstler 2526, 2881; Batu Togoh, 200 ft., Wray 2138; Chanderiang, Kunstler 5662, 5677; Gunong Batu Puteh, 3,400 ft., Wray 481, 997, 1068.

Selangor: Ulu Kerling, 400–600 ft., Kunstler 10626.

p. 431. **Stemonurus capitatus,** Beccari.

Syn. Lasianthera mallaccensis, Mast.

Perak: Taiping, Scortechini 470; Ulu Slim, 500–800 ft., Kunstler 10668.

Selangor: Ulu Bubong, 400–600 ft., Kunstler 10125.

Stemonurus umbellatus, Beccari.

Syn. Lasianthera umbellata, King.

Perak: Without locality, Scortechini 476.

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p. 433. **Miquelia caudata**, King.

Perak: Gunong Bubu, 300–800 ft., Kunstler 7621; Gopeng, 500–800 ft., Kunstler 4659; Chanderiang, 300–500 ft., Kunstler 5680.

p. 434. **Iodes velutina**, King.

Perak: Batu Togoh, 200 ft., Wray (Non-Scortechini) 2141.

p. 435. **Iodes ovalis**, Bl.

Perak: Batu Togoh, 200 ft., Wray 2153; Sungei Larut, plain, Wray 2362.

p. 440. **Ilex Maingayi**, H.f.

Perak: Selama, Scortechini 1120.

p. 446. **Glyptopetalum quandrangulare**, Prain.

Perak: Larut, 2,500–3,000 ft., Kunstler 5274; Maxwell's hill, Wray 3229; near Gunong Bujong Malaka, 300–500 ft., Kunstler 7106; Gunong Chabang, Scortechini 19; Gopeng, 300–500 ft., Kunstler 8222.

p. 447. **Glyptopetalum Scortechinii**, King.

Perak: Kurau, Scortechini 1617.

p. 448. **Lophopetalum Scortechinii**, King.

Perak: Gopeng, Scortechini 1951.

p. 449. **Lophopetalum oblongifolium**, King.

Perak: Gopeng, Scortechini 1945.

p. 450. **Lophopetalum Maingayi**, Ridl.

Syn. Kokoona Scortechinii, King.

Perak: Gopeng, Scortechini 2042.

p. 451. **Celastrus malayensis**, Ridl.

Syn. Celastrus Championii, King.

Perak: Larut, dense jungles above 4,000–4,500 ft., Kunstler 6928; Larut, Scortechini 1428; Tapah, Wray 175; Chanderiang, 300–500 ft., Kunstler 5690.

p. 456. **Salacia viminea**, Wall.

Perak: Kuala Dipang, Scortechini 1811.

p. 457. **Salacia perakensis**, King.

Dindings: Pangkor, Scortechini 1042.

p. 459. **Salacia latifolia**, Wall.

Dindings: Pangkor, Scortechini 59, 951.

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Salacia prinoides, DC.

Perak: Gunong Arang Para, Scortechini 801.

Salacia prinoides, var. macrophylla, King.

Perak: Batu Togoh, 200 ft., Wray 2133.

Salacia flavescens, Kurz.

Penang, 300–500 ft., Kunstler 4906.

Perak: Ulu Selama, Scortechini 1309 and 1734; Larut, within 100 ft., Kunstler 6596; Kuala Depang, Scortechini 1734.

Selangor: P.P. (Pahang Path), Kunstler 10948.

p. 462. **Zizyphus Kunstleri**, King.

Perak: Larut, Scortechini 1541, Wray 328; Assam Kumbang, Wray 1911.

p. 464. **Zizyphus affinis**, Hemsl.

Perak: Ayer Larut plains, Wray 1995; Larut, within 500 ft., Kunstler 2443, 3568, 3747, 5528, 6720; Larut hills, Scortechini 192 and 1495.

p. 466. **Ventilago malaccensis**, Ridl.

Syn. Ventilago leiocarpa, Law.

Perak: Sungei Larut, plain, Wray 2276; Tupai plain, Wray 2335; Gunong Bubu, 300–500 ft., Kunstler 7644; Batang Padang District, 300–500 ft., Kunstler 7758.

p. 467. **Ventilago oblongifolia**, Bl.

Syn. Smythea macrocarpa, Hemsl. *var. pubescens*, King.

Perak: Larut, within 500 ft., Kunstler 3472; Larut, Scortechini 1405[a] and 2110[a]; Gunong Pondok, 800–1,000 ft., Kunstler 7726.

Note.—Ridley quotes Wray, but there is no specimen of his in this herbarium and King makes no mention of Wray in his materials. Evidently Wray did not collect this species.

Ventilago velutina, Ridley.

Syn. Smythea macrocarpa var. pubescens, King, in part.

Ridley has quoted Scortechini under Perak without locality, evidently basing this species partly on his specimen. There are only two sheets, numbers 1405[a] and 2110[a] of Scortechini already quoted under V. oblongifolia and an unnumbered sheet named Smythea macrocarpa var. pubescens. I find it difficult to agree with Ridley in creating a new species apparently out of this Scortechinian sheet for these reasons. Firstly the leaves are not cuneate even slightly, but rounded and oblique as in V. oblongifolia, secondly, fruits are all perfectly hairy.

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Ridley says in his description of the new species, that the cymes are axillary, small, sessile and many flowered, whereas down below in the same description, he says flowers unknown. So without any radical difference between them, there seems little ground in creating a new species and I am inclined to merge it under V. oblongifolia.

p. 468. **Smythea pacifica,** Seem.

Dindings : Pangkor, Scortechini 1008.

Smythea macrocarpa, Hemsl.

Perak : Larut, Scortechini 1405, 1413, Kunstler 2817, 3628, 3642, 6597.

Selangor : Ulu Bubong, 400–600 ft., Kunstler 10473.

p. 472. **Vitis macrostachya,** Miq.

Perak : Batu Togoh, 200 ft., Wray 2164.

Selangor : Ulu Bubong, 400–600 ft., Kunstler 10309.

Vitis gracilis, Wall.

Perak : Tapah, Wray 1343.

Vitis cinnamomea, Wall.

Perak : Larut, Kunstler 1953, 2912; Gunong Arang Para, Scortechini 845; Gopeng, Kunstler 782; Kinta river, Kunstler 760; without locality, Scortechini 241.

p. 473. **Vitis compositifolia,** Laws.

Perak : Larut, 800–1,000 ft., Kunstler 5230.

Vitis polystachya, Wall.

Syn. Vitis polythyrsa, King.

Perak : Larut, 3,000–4,000 ft., Kunstler 6246; Plus river, Wray 653; Tapah, Wray 840; Gunong Batu Puteh, Scortechini 244.

p. 474. **Vitis Scortechinii,** King.

Perak : Gopeng, Kunstler 2897, 4644 and 5942; without locality, Scortechini. No. 317 of Mr. Burkill's note.

Vitis peduncularis, Wall.

Perak : Upper Perak, 300 ft., Wray 3666; Taiping, Scortechini 207.

Vitis Lawsoni, King.

Perak : Maxwell's hill, Scortechini 269; Ulu Leding, Wray 2017; Assam Kumbang plain, Wray 1926; Gunong Arang Para, Scortechini 776.

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p. 475. **Vitis Wrayi**, King.

Perak : Larut, 300–800 ft., Kunstler 4050 and 5120, at 3,500–4,000 ft. height, Kunstler 6426; Changat Jiring plains, Wray 2749; Taiping hills, Scortechini 426 and 483.

Vitis lanceolaria, Wall.

Perak : Upper Perak, Wray 3387; Larut, Scortechini 102.

Vitis Kunstleri, King.

Perak : Near Batang Padang river, 300–400 ft., Kunstler 8027.

Vitis semicordata, Wall var. Scortechinii.

Perak : Sungei Raya, Kunstler 890; Maxwell's hill, Scortechini 317.

p. 476. **Vitis cantoniensis**, Seem.

Perak : Larut 1,500–2,000 ft., Kunstler 2285; Maxwell's hill, Scortechini 234; Gunong Arang Para, Scortechini 707; Malacca, Griffith.

Vitis furcata, Laws.

Perak : Gopeng, 500–800 ft., Kunstler 4763; Tapah, Wray 1430.

Vitis furcata, Laws var. pubescens, King.

Perak : Taiping, 200–500 ft., Kunstler 6409, 8402; Maxwell's hill, Scortechini 299.

p. 477. **Vitis discolor**, Dalz.

Perak : Without locality, Scortechini.

p. 478. **Vitis trifolia**, L.

Perak : Without locality, Scortechini.

p. 479. **Vitis novemfolia**, Wall.

Perak : Larut, 1,800–2,000 ft., Kunstler 2736; Batu Gajah, Scortechini 1928.

p. 481. **Pterisanthes eriopoda**, Planch.

Syn. Pterisanthes coriacea, King var. araneosa.

Perak : Kota near Taiping, plain, Wray 2556.

p. 482. **Pterisanthes rufula**, Planch.

Perak : Gunong Batu Puteh, Wray 1178.

Pterisanthes cissoides, Bl.

Perak : Gopeng, Kunstler 727.

p. 483. **Leea simplicifolia**, Zoll.

Perak : Gunong Ijuk, Scortechini 1206.

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p. 484. **Leea gigantea**, Griff.

Perak: Larut, 300–500 ft., Kunstler 249; Gopeng, Kunstler 249.

p. 485. **Leea angulata**, Korth.

Perak: Upper Perak, 300 ft., Wray 3803; Dipang, Scortechini 1829; Gunong Bujong Malaka, 200–300 ft., Kunstler 7066.

p. 489. **Leea æquata**, L.

Kedah: Kunstler, 1725.

Perak: Gopeng, 500 ft., Kunstler 4387; Dipang, Scortechini 1828.

p. 492. **Aphania paucijuga**, Radlk.

Perak: Batu Kurau, Scortechini 1674.

p. 493. **Lepisanthes Scortechinii**, King.

Perak: Gopeng, Scortechini 2090.

Lepisanthes cuneata, Hiern.

Perak: Upper Perak, 300 ft., Wray 3563; Larut, Scortechini 212; Gunong Bubu, 300–500 ft., Kunstler 7672; Tapah, Wray 1400.

Selangor: Ulu Kal, 400–600 ft., Kunstler 10489.

p. 494. **Lepisanthes longifolia**, Radlk.

Perak: Taiping, 1,500–2,000 ft., Kunstler 8465.

Selangor: Ulu Bubong, 400–600 ft., Kunstler 10220.

p. 497. **Xerospermum lævigatum**, Radlk.

Dindings: Pangkor, Scortechini 1019.

Xerospermum unijugum, Radlk.

Perak: Larut, 100 ft., Kunstler 7267; without locality, Scortechini.

Xerospermum intermedium, Radlk.

Syn. Xerospermum muricatum, King.

Perak: Larut, Kunstler 3762; Chanderiang, Kunstler 5673; Batang Padang District, Kunstler 7865.

p. 498. **Xerospermum Wallichii**, King.

Perak: Upper Perak, 300 ft., Wray 3419, 3580.

Selangor: P.P. (Pahang Path), 2,500–3,000 ft., Kunstler 10945.

p. 499. **Nephelium glabrum**, Noronh.

Perak: Larut, 300 ft., 2672, 3787, 4039, 5394; Kota Bahru, Kunstler 1058.

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p. 501. **Nephelium tuberculatum**, Radlk.

Perak: Kualu Dipang, Scortechini 1763, 1767 ; Batang Padang District, 200–300 ft., Kunstler 7903.

p. 502. **Nephelium eriopetalum**, Miq.

Perak: Larut, Scortechini 143 ; Tapah, Wray 1300.

p. 503. **Nephelium echinulatum**, Ridl.

Syn. Euphoria echinulata, Radlk.

Perak: Gunong Ijuk (? G. Hijou), Scortechini 4 ; Gunong Bubu, 500–800 ft., Kunstler 7659.

Nephelium setosum, Ridl.

Syn. Euphoria setosa, Radlk.

Perak: Gunong Pondok, 1,500–2,000 ft., Kunstler 7677.

p. 504. **Pometia alnifolia**, Radlk.

Syn. Pometia gracilis, King.

Perak: Larut, 300–500 ft., Kunstler 3479, 3607, 3781, Scortechini 113 ; Batang Padang, 300–500 ft., Kunstler 7774, 7983 ; Gopeng, 300–500 ft., Kunstler 8212.

p. 506. **Guioa fuscidula**, Radlk.

Syn. Cupania fuscidula, King.

Perak: Batu Gajah, Scortechini 1714.

p. 507. **Arytera littoralis**, Bl.

Perak: Larut, Scortechini 20 ; Gopeng Kunstler 695, 4456.

p. 508. **Mischocarpus sumatranus**, Bl.

Perak: Larut, Kunstler 3933, 4089, 5391, 5397 ; Taiping, Scortechini 97, 484 ; Taiping, 300–500 ft., Kunstler 8307, 8329, 8374, 8403 ; Chanderiang, 300–500 ft., Kunstler 5727.

Mischocarpus Lessertianus, Ridl.

Syn. Mischocarpus sundaicus, King.

Perak: Larut, Kunstler 4186 ; Larut, Scortechini 1458.

Dindings: Pangkor, Scortechini 953.

p. 509. **Paranephelium macrophyllum**, King.

Perak: Tupai, plain, Wray 2675 ; near Gunong Bujong Malaka, 500–1,000 ft., Kunstler 7027.

p. 513. **Sabia limoniacea**, Wall.

Perak: Gunong Arang Para, Scortechini 628[a].

Sabia sumatrana, Bl.

Perak: Gopeng, 200–300 ft., Kunstler 8205.

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p. 514. **Meliosma lancifolia**, H.f.

Parak : Without locality, Scortechini.

Meliosma elliptica, H.f.

Perak : Gopeng, 300–500 ft., Kunstler 5966, 6150; Batang Padang District, 300–500 ft., Kunstler 8103.

p. 520. **Bouea macrophylla**, Griff.

Perak : Gopeng, Scortechini 1958; near Kota Bahru river, Kunstler 679.

p. 527. **Gluta coarctata**, H.f.

Perak : Ulu Selama, Scortechini 1375.

Gluta elegans, King.

Penang: Base of Penang hill, King, at a height of 600 ft. on Penang hill, Kunstler 1366 and from between 800–1,000 ft. on the Penang hill, Kunstler No. 4913.

p. 529. **Melanorrhœa Wallichii**, H.f.

Syn. Melanorrhœa Maingayi, H.f.

Perak : Batu Gajah, Scortechini 1719.

p. 530. **Melanorrhœa Woodsiana**, Scort.

Perak : Batang Padang District, 300–500 ft., Kunstler 7788; Gopeng, Scortechini 2086.

p. 531. **Melanorrhœa inappendiculata**, King.

Perak : Larut, Kunstler 5418.

p. 532. **Swintonia spicifera**, H.f.

Penang: Kunstler 1802.

Perak : Larut, Kunstler 3534, 3677; Gopeng, Scortechini 1981, 2083.

p. 534. **Campnosperma Griffithii**, Marchand.

Perak : Assam Kumbang plains, Wray 2575.

p. 537. **Microstemon velutina**, Engl.

Perak : Gopeng, Scortechini 1924.

Pentaspadon officinalis, Holmes.

Perak : Ulu Selama, Wray 4168; Gopeng, Scortechini 2043.

p. 538. **Rhus perakensis**, Scort.

Perak : Waterfall Taiping, 300 ft., Wray 2316; Batu Kurau, Scortechini 1668; unlocalized, Wray 3095.

p. 541. **Melanochyla nitida**, King.

Perak : Gopeng, Scortechini 2037.

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p. 546. **Connarus oligophyllus,** Wall.

Perak: Gunong Bubu, dense jungles at 1,500–2,000 ft., Kunstler 8335; Batang Padang District, on low hills at 500–800 ft., Kunstler 7804.

Dindings: Pangkor, Scortechini 1057.

p. 547. **Connarus ellipticus,** King.

Perak: Larut, Scortechini 1689; Taiping, open jungles within 100 ft., Kunstler 8435; Gopeng near water 300–500 ft. height, Kunstler 5958; Sungei Larut, plains, Wray 2870, 2873; Waterfall Taiping, Wray 1831.

p. 548. **Ellipanthus Scortechinii,** King.

Perak: Gunong Arang Para, Scortechini 607[a].

p. 549. **Ellipanthus gibbosus,** King.

Perak: Larut, Kunstler 1977, 2658, 7542; Waterfall Taiping, 300 ft., Wray 2404; Gunong Arang Para, Scortechini 673; Sungei Raya, Kunstler 754; Kuala Dipang, on limestone rocks, Kunstler 8257, Scortechini 1869; Chanderiang, dense jungles at 300–500 ft., Kunstler 5709; Batang Padang, 300–800 ft., Kunstler 7799.

Selangor: Ulu Bubong, 300–500 ft., Kunstler 10056.

Rourea anomala, King.

Perak: Taiping, dense jungles at 3,000–3,500 ft., Kunstler 8312; Larut, Kunstler 3066, 6755; Banks of Kinta river, Kunstler 804.

Selangor: Ulu Bubong, Kunstler 10542; Ulu Bera, Kunstler 10863.

p. 551. **Rourea similis,** Bl.

Syn. Rourea parallella, Planch.

Perak: Larut, Scortechini 1690; Gopeng, within 500 ft., Kunstler 4302.

Selangor: Ulu Bubong, 400–600 ft., Kunstler 10119, 10592; Ulu Kal, 500–800 ft., Kunstler 10896.

p. 552. **Roureopsis Scortechinii,** King.

Perak: Gunong Arang Para, Scortechini 613.

p. 553. **Agelæa Wallichii,** H.f.

Perak: Larut, 300–500 ft., Kunstler 3735; Batu Gajah, Scortechini 1730.

p. 558. **Abrus pulchellus,** Wall.

Perak: Gunong Arang Para, Scortechini 630; Gopeng, Kunstler 1023.

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p. 561. **Crotalaria verrucosa**, L.

Perak: Scortechini (without locality).

p. 562. **Crotalaria Saltiana**, Andr.

Perak: Taiping plains, Wray 1766; Taiping, Scortechini 454.

Singapore: Kunstler 1200.

p. 565. **Eriosema chinense**, Vogel.

Perak: Upper Perak, at 300 ft., Wray 3804.

p. 566. **Flemingia congesta**, Roxb.

Perak: Larut, Scortechini 134.

Phaseolus calcaratus, Roxb.

Perak: Batu Kurau, Scortechini.

Phaseolus calcaratus, Roxb. var. gracilis.

Perak: Larut, Kunstler 2467 and Scortechini 1476; Jenah, Wray 1756; Gopeng, Kunstler 990; near Durian Sabatang, Kunstler 1035.

p. 571. **Pueraria phaseoloides**, Bth.

Perak: Batu Kurau, Scortechini 1591; Larut, Scortechini 1441.

p. 573. **Canavalia turgida**, Grah.

Perak: Krian, Scortechini 1391; Durian Sabatang, Kunstler 1123.

Dindings: Pangkor, Scortechini 978.

p. 574. **Spathalobus ferrugineus**, Bth.

Perak: Larut, within 300 ft., Kunstler 3566, Scortechini 1466; Assam Kumbang plains, Wray 1941; Ulu Leding, Wray 2008; Taiping plain, Wray 2381; Kota near Taiping, plain, Wray 3258.

Spathalobus gyrocarpus, Bth.

Perak: Larut, open jungles, Kunstler 3181; Upper Perak, 300 ft., Wray 3435; Batang Padang District, 500–600 ft., Kunstler 7770.

p. 575. **Spathalobus Maingayi**, Prain.

Perak: Larut, Scortechini 1537; Taiping, Scortechini 206.

p. 576. **Mucuna biplicata**, Teysm. and Binn.

Perak: Ulu Kangsar, Scortechini 925; Larut, 200–500 ft., Kunstler 6805; Upper Perak, 200 ft., Wray 3746.

p. 579. **Erythrina indica**, Lam.

Perak: Kurau River, Scortechini 1646.

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p. 583. **Sesbania grandiflora**, Pers.

Perak: Taiping, Scortechini 525.

p. 584. **Millettia sericea**, Bth.

Perak: Sungei Larut plain, Wray 2364; Kuala Dipang, Scortechini 1797; Batu Togoh, 200 ft., Wray 2178; Gopeng, 300–500 ft., Kunstler 5804; Kota Bahru, Kunstler 401; near Gunong Bubu, 300–500 ft., Kunstler 7366.

Selangor: Ulu Bubong, 400–600 ft., Kunstler 10479.

Millettia unifoliata, Prain.

Perak: Tupai plains, Wray 2836; between Blanja and Batu Gajah, Scortechini 1711.

Dindings: Pangkor, Scortechini 1023.

Millettia albiflora, Prain.

Perak: Ulu Selama, Scortechini 1288; Taiping plains; Wray 1864; Kota near Taiping, plains, Wray 1943; Gopeng, Scortechini 1948.

p. 586. **Adinobotrys erianthus**, Dunn.

Syn. Millettia eriantha, Bth.

Perak: Larut, 300–500 ft., Kunstler 3921, 6439; Batu Togoh, 300 ft., Wray 2533; without locality, Scortechini 1553.

p. 587. **Adinobotrys atropurpureus**, Dunn.

Syn. Millettia atropurpureus.

Perak: Matang Jambu plain, Wray 2526; Taiping plain, Wray 1863; Gopeng, Scortechini 193[a]; Gunong Batu Puteh, 1,500–2,000 ft., Kunstler 8012.

Padebruggia dasyphylla, Miq.

Syn. Millettia oocarpa, Prain.

Perak: Without locality, Scortechini 429.

Selangor: Ulu Selangor, 800–1,200 ft., Kunstler 8759.

p. 590. **Dalbergia phyllanthoides**, Bl.

Perak: Larut, 500 ft., Kunstler 4978, 5182; Gopeng, Scortechini 201.

Dindings: Scortechini 1071.

Dalbergia rostrata, Grah.

Perak: Larut, Kunstler 3579; Relau Tujor, Wray 1838; Simpang, near Taiping, plains, Wray 2965; Simpang and Taiping plains, Wray 2098, 3008; Gunong Ijuk (? G. Hijou), Scortechini 1340.

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p. 591. **Dalbergia torta**, Grah.

Perak: Matang coast, Wray 2502.

Dalbergia tamarindifolia, Roxb.

Perak: Taiping plain, Wray 2387; Larut, 300 ft., Kunstler 2346, 6481.

Selangor: Ulu Selangor, 500–800 ft., Kunstler 8667.

p. 593. **Pterocarpus indicus**, Willd.

Perak: Near Taiping, Scortechini 505; Ayer Larut plains, Wray 2003; Sungei Larut plains, Wray 2230.

p. 594. **Derris sinuata**, Thw.

Perak: Krian, Scortechini.

Derris thyrsiflora, Bth.

Perak: Ijuk, Scortechini 1176 and Kurau, Scortechini 1639; Assam Kumbang, Wray 3068; Larut, Scortechini 1542; Jeneh, Wray 1985; Matang Jambu plain, Wray 2513; Trong, plain, Wray 2770; Gunong Pondok, Kunstler 7638.

Dindings: Scortechini 907.

Selangor: Ulu Bubong, Kunstler 10062, 10395, 10850.

p. 595. **Derris dalbergioides**, Baker.

Perak: Gopeng, Scortechini 1995 and Kunstler 5805; Sungei Larut, below Taiping, Kunstler 3039.

p. 597. **Derris elliptica**, Bth.

Perak: Kampong kota near Taiping, Wray 3823; Taiping, Wray 1678; Bukit Gantang plains, Wray 1678; Jeneh, Wray 1695; Kuala Dipang, Scortechini 1738.

p. 598. **Derris malaccensis**, Prain.

Perak: Taiping, Scortechini 110; Larut, near water, Kunstler 3190 and 4028; Simpang plains near Taiping, Wray 2025.

p. 602. **Uraria crinita**, Desv.

Perak: Ijuk, Scortechini; Larut, Scortechini 71; Taiping, Scortechini 517; Sunga Raya, Kunstler 1011.

p. 603. **Uraria lagopoides**, DC.

Perak: Larut, Scortechini 11.

p. 604. **Alysicarpus vaginalis**, DC.

Perak: Larut, Scortechini 1462.

p. 613. **Ormosia gracilis**, Prain.

Perak: Larut, 1,800–2,000 ft., Kunstler 4234; Maxwell's hill, Scortechini 324.

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p. 616. **Cassia nodosa,** Ham.

Perak: Gopeng, Scortechini 1934.

p. 617. **Cassia timoriensis,** DC. var. Xanthocoma, Miq.

Perak: in open jungles near Gopeng, Kunstler 689; Kuala Dipang, Scortechini 1751 and Kunstler 8255.

Selangor: Ulu Bubong, in open bamboo forests at 300–400 ft. height, Kunstler 10087.

Cassia siamea, Lam.

Perak: Blanja to the north-west of Batu Gajah, 100 ft. above sea level, Wray 147.

p. 620. **Koompassia malaccensis,** Bth.

Perak: Open jungles on Gunong Bubu at 800–1,500 ft. high, Kunstler 7692; on road from Blanja to Batu Gajah, Scortechini 1712.

Koompassia excelsa, Taubert.

Syn. Koompassia parvifolia, Prain.

Perak: Gopeng, Scortechini 1996 (Non Kunstler). Kunstler did not collect this.

p. 622. **Dialium Maingayi,** Baker.

Perak: Upper Perak, at 300–1,000 ft. height, Wray 3407 and 3767; Gopeng, Scortechini 2052 (Non Kunstler).

p. 625. **Bauhinia acuminata,** L.

Perak: Kota Bahru, Kunstler 413; Dipang, Scortechini 1812.

p. 626. **Bauhinia mollissima,** Wall.

Perak: Sungei Larut, plain, Wray 2461.

p. 627. **Bauhinia Hullettii,** Prain.

Penang: Kunstler 1347.

Perak: Tapa, Wray 177.

p. 628. **Bauhinia Griffithiana,** Prain.

Perak: Maxwell's hill, Scortechini 298 (Non Kunstler).

Bauhinia ferruginea, Roxb.

Perak: Tapah, Wray 1255; Larut, Scortechini 67[a], Kunstler 2508 and 3792.

Bauhinia Ridleyi, Prain.

Perak: Taiping, Scortechini 519; Batu Gajah, Scortechini 140[a].

p. 629. **Bauhinia glauca,** Wall.

Perak: Taiping, Scortechini 219.

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Bauhinia bidentata, Jack.

Perak: Selama, 300–600 ft., Kunstler 3130; Larut, 300–500 ft., Kunstler 3183 and 3528; Maxwell's hill, Scortechini 248; Tapah, Wray 1628.

p. 630. **Bauhinia lucida**, Wall.

Perak: Batu Togoh, 200 ft., Wray 2127; Larut, Scortechini 66, 1534.

p. 631. **Bauhinia integrifolia**, Roxb.

Perak: Larut, 500–800 ft., Kunstler 4897; Taiping, Scortechini 98 and 505; Plus river, Wray 46; Banks of Kinta river, Kunstler 964,

p. 632. **Bauhinia Kingii**, Prain.

Perak: Maxwell's hill, Scortechini 320.

Bauhinia Finlaysoniana, Grah.

Perak: Sungei Larut, plains, Wray 2300; Maxwell's hill, Scortechini 247.

Bauhinia Wrayi, Prain.

Perak: Assam Kumbang plain, Wray 1934 and 2782.

p. 633. **Bauhinia strychnoidea**, Prain.

Perak: Open jungles near Gunong Bujong Malaka at 300–800 ft. high, Kunstler 7054.

p. 634. **Bauhinia glabrifolia**, Baker.

Perak: Larut, Scortechini 1512; near Taiping, Scortechini 316.

p. 635. **Cynometra inæqualifolia**, A. Gray.

Perak: Kurau, Scortechini 2190.

p. 638. **Sindora intermedia**, Baker.

Dindings: Pangkor, Scortechini 1064.

p. 640. **Afzelia palembanica**, Baker.

Perak: Dipang, Scortechini 1830.

p. 641. **Saraca declinata**, Miq.

Perak: Kuala Kenering, Wray 554.

Saraca bijuga, Prain.

Perak: Larut, Scortechini 1503.

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p. 643. **Saraca triandra**, Baker.

Perak: Gopeng, 500–800 ft., Kunstler 4507 and 4517; Batu Gajah, Scortechini 1747; Batang Padang District, 500–800 ft., Kunstler 7912.

Selangor: Ulu Kerling, dense bamboo forests, 400–600 ft., Kunstler 8561.

p. 647. **Peltophorum dasyrachis**, Kurz.

Perak: Gopeng, Scortechini 1994.

Mezoneuron sumatranum, W. and A.

Perak: Kuala Dipang, Scortechini 1766.

p. 649. **Cæsalpinia Bonduc**, Roxb.

Perak: Near Gunong Bujong Malaka, Kinta, 200–500 ft., Kunstler 7147.

p. 650. **Parkia speciosa**, Hassk.

Perak: Larut, 500–2,000 ft., Kunstler 5300; near Taiping, Scortechini 504.

p. 653. **Adenanthera pavonina**, L.

Perak: Matang Jambu, plains, Wray 2575; Taiping, Scortechini 80.

p. 654. **Adenanthera bicolor**, Moon.

Dindings: Pangkor, Scortechini 1073.

Entada Schefferi, Ridl.

Perak: Gunong Arang Para, Scortechini 769; Taiping plains, Wray 1715 and 2860; Durian Sabatang, Kunstler 1078.

p. 658. **Albizzia myriophylla**, Bth.

Penang: Kunstler 1444.

Perak: Larut, Scortechini 128[b].

p. 663. **Pithecolobium microcarpum**, Bth.

Perak: Larut, Kunstler 5492; Taiping, Scortechini 64; Gopeng, 300–500 ft., Kunstler 5842; Batang Padang, in dense jungles, at 500–800 ft. height, Kunstler 7837.

Selangor: Ulu Bera, dense jungles, Kunstler 10802; Ulu Kal, 400–600 ft., Kunstler 10354 and 10729.

p. 664. **Pithecolobium clypearia**, Bth.

Perak: Taiping, Scortechini 481; Sungei Larut, plains, Wray 2643.

p. 669. **Parinarium scabrum**, Hassk.

Perak: Gopeng, Scortechini 1981.

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p. 670. **Parinarium heteropetalum,** Scort.

Perak: Larut, 1,000-1,500 ft., Kunstler 6684 and 6889; Gopeng, Scortechini 2040.

p. 672. **Prunus martabanica,** King var. Scortechinii, King.

Perak: Kuala Dipang, Scortechini 1782.

p. 673. **Pygeum grandiflorum,** King.

Perak: Near Gunong Malaka, 500–800 ft., Kunstler 7425.

p. 674. **Pygeum polystachyum,** H.f.

Perak: Larut, 1,500-2,000 ft., Kunstler 6603 and 6847; Gopeng, Scortechini 2065.

Pygeum lanceolatum, var. Maingayi (H.f.), Ridl.

Perak: Larut, 300–500 ft., Kunstler 5336, Scortechini 217.

Pygeum Scortechinii, King.

Perak: Maxwell's hill, Scortechini 357.

p. 676. **Pygeum Hookerianum,** King.

Perak: Ulu Selama, Scortechini 1274; Larut, 300 ft., Kunstler 1970 and 2083; Gopeng, 500–800 ft., Kunstler 4789 and 6032.

p. 679. **Rubus elongatus,** Smith.

Perak: Larut, Scortechini 1468; Gunong Batu Puteh, Wray 421.

p. 682. **Weinmannea Blumei,** Planch.

Perak: Gunong Hijou, 5,000 ft., Scortechini 446.

p. 684. **Polyosma fragrans,** Benn.

Perak: Gunong Arang Para, Scortechini 520.

p. 685. **Polyosma coriacea,** King.

Perak: Gunong Inas, 5,000 ft., Wray 4131, Scortechini 805.

Polyosma Scortechinii, King.

Perak: Gopeng, Scortechini 1900.

p. 686. **Polyosma flavo-virens,** Ridl.

Syn. Polyosma velutina King, non Bl.

Perak: Chanderiang, 300–500 ft., Kunstler 5621, Scortechini 2111.

p. 691. **Maingaya malayana,** Oliv.

Perak: Gunong Arang Para, Scortechini 819.

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Bucklandia populnea, R. Br.

Perak: Ulu Batang Padang, 4,900 ft., Wray 1535.

p. 695. **Bruguiera eriopetala**, Wt.

Perak: Matang, sea coast, Wray 2711.

p. 697. **Carallia eugenioidea**, King.

Perak: Maxwell's hill, Scortechini 326.

Carallia Scortechinii, King.

Perak: Gopeng, Scortechini 2025, Kunstler 1013.

p. 699. **Pellacalyx axillaris**, Korth.

Perak: Port Weld, Scortechini 1190; Durian Sabatang, Kunstler 1049.

Dindings: Pangkor, Scortechini 1076.

Pellacalyx Saccardianus, Scort.

Perak: Tapah, Wray 1328.

p. 701. **Anisophyllæa Scortechinii**, King.

Perak: Gunong Arang Para, Scortechini 1807; Chanderiang, Kunstler 5681; Gunong Batu Puteh, Wray 760.

Selangor: Ulu Kerling, Kunstler 8821.

p. 702. **Anisophyllæa apetala**, Scort.

Perak: Tupai, plains, Wray 2340; Trong plains, Wray 2758; Gunong Bubu, 300–800 ft., Kunstler 7698; Gunong Arang Para, Scortechini 684 and 1808.

p. 704. **Terminalia belerica**, Roxb.

Perak: Scortechini 1684.

Selangor: Ulu Kerling, 500–800 ft., Kunstler 8778.

p. 708. **Combretum sundaicum**, Miq.

Perak: Taiping, Waterfall, Wray 4272; Gopeng, 500–800 ft., Kunstler 4360, 4452 and 5864, Scortechini 2016.

Dindings: Pangkor, Scortechini 1029.

p. 710. **Combretum nigrescens**, King.

Perak: Gopeng Dist., Kunstler 8140.

p. 711. **Quisqualis densiflora**, Wall.

Perak: Kuala Kangsar, Wray 3353.

p. 713. **Leptospermum flavescens**, Sm. var javanica.

Perak: Gunong Bubu, Scortechini 754, Wray 3839; Gunong Batu Puteh, Wray 335.

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p. 715. **Tristania merguensis**, Griff.

Perak: Waterfall, Taiping, Wray 2921; Maxwell's hill, Scortechini 327; Gunong Inas, 5,000 ft., Wray 4124.

Dindings: Scortechini 1022, 1021.

p. 725. **Eugenia pseudo-formosa**, King.

Perak: Taiping, Scortechini 185; Relau Tujor, Wray 1809, Upper Perak, 300 ft., Wray 3581.

Eugenia Scortechinii, King.

Perak: Gunong Arang Para, Scortechini 649; Batang Padang District, 500–800 ft., Kunstler 7801.

Eugenia Scortechinii var. parvifolia, King.

Perak: Larut, within 500 ft., Kunstler 3348.

Selangor: Ulu Bubong, Kunstler 10437.

p. 726. **Eugenia pendens**, Duthie.

Perak: Upper Perak, 300 ft., Wray 3537; Gunong Arang Para, Scortechini 1809; Gopeng, Scortechini 2021.

p. 728. **Eugenia densiflora**, Duthie.

Perak: Plus river, Wray 544; Gunong Bubu, Scortechini 149 and 743; Batang Padang District, 300–500 ft., Kunstler 8102.

Selangor: P.P. (Pahang Path), 2,500–3,000 ft., Kunstler 10940.

Eugenia mollis, King.

Perak: Taiping plains, Wray 2372.

p. 729. **Eugenia limnæa**, Ridl.

Syn. Eugenia oblongifolia var. robusta, King.

Perak: Taiping, Scortechini 216.

p. 731. **Eugenia Duthieana**, King.

Perak: Gunong Arang Para, Scortechini.

p. 732. **Eugenia Dyeriana**, King.

Syn. Eugenia Clarkeana, King.

Perak: Taiping plains, Wray 2094; Gopeng, Scortechini 205[a]; Batang Padang District, 300–500 ft., Kunstler 7811.

Eugenia Hemsleyana, King.

Perak: Relau Tujor, Wray 1803.

p. 734. **Eugenia Benjamina**, King.

Perak: Maxwell's hill, 1,200 ft., Wray 2632.

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p. 736. **Eugenia cordifoliata,** Ridl.

Syn. Eugenia Swettenhamiana, King.

Perak: Unlocalized, Scortechini unnumbered.

p. 739. **Eugenia polita,** King.

Perak: Gunong Arang Para, Scortechini 585.

p. 740. **Eugenia caudata,** King.

Perak: Gunong Hijau, 5,000 ft., Scortechini 444; Larut, Kunstler 3654, 4241, 6262; Maxwell's hill, Wray 2824; Gunong Batu Puteh, 3,400 ft., Wray 472, 1176, 1514.

p. 743. **Eugenia valdevenosa,** Duthie.

Perak: Relau Tujor, Wray 2209; Kurau, Scortechini 1662; in open jungles near Gopeng, Kunstler 737.

Selangor: Ulu Bubong, 400–600 ft., Kunstler 10246, 10873.

p. 744. **Eugenia oblongifolia,** Duthie.

Perak: Larut, Scortechini 85; Gunong Arang Para, Scortechini 618.

Eugenia chloroleuca, King.

Perak: Waterfall hill, Taiping, Wray 2917; Larut, gardens on Taiping hills, Scortechini 45.

p. 745. **Eugenia myriantha,** King.

Perak: Maxwell's hill, Scortechini 337.

p. 746. **Eugenia pseudosubtilis,** King, var. subacuminata.

Penang: Kunstler 1793.

Eugenia venulosa, Wall.

Perak: Kurau river, Scortechini; Taiping, Scortechini 188, Wray 3016. (Haram river mentioned by Ridley is an error for Kurau.)

p. 749. **Eugenia oblata,** Roxb.

Kedah: Banks of Kedah river (near Alor State), Kunstler 1771.

Perak: Unlocalized Scortechini.

p. 750. **Eugenia inophylla,** Roxb.

Perak: Sungei Larut, plains, Wray 2734; Taiping plains, Wray 2655; Kota, near Taiping plains, Wray 2554; Tapah, Wray 1377.

Eugenia inophylla, Roxb. var. Barnardi.

Perak: Gunong Arang Para, Scortechini 526.

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p. 752. **Eugenia subdecussata**, Duthie.

Perak: Gopeng, Scortechini 2066; Gopeng, 500–1,000 ft., Kunstler 4769; Batang Padang District, 300–500 ft., Kunstler 3907, 8118.

Eugenia subdecussata, var. montana, King.

Perak: Gunong Bubu, 5,000 ft., Wray 3844.

p. 754. **Eugenia Wrayi**, King.

Perak: Gunong Bubu, 5,000 ft., Wray 3839.

p. 755. **Eugenia setosa**, King.

Perak: Taiping plains, Wray 2704; unlocalized, Scortechini 313.

Pseudo-Eugenia singaporensis, King.

Perak: Gopeng, Scortechini 2061, Kunstler 5957.

Selangor: Ulu Selangor, 400–600 ft., Kunstler 8710.

Singapore: Kunstler 1242.

p. 757. **Barringtonia conoidea**, Griff.

Perak: Krian, Scortechini 1385.

Barringtonia Scortechinii, King.

Perak: Larut, Kunstler 3598, 3854, 6252, Maxwell's hill, Scortechini 237[a]; Gunong Arang Para, Scortechini 595; on the way to Blanja, Scortechini 1694; Gopeng, Scortechini 2020.

Barringtonia pauciflora, King.

Perak: Larut, Scortechini 939.

p. 758. **Barringtonia macrostachya**, Kz.

Perak: Kota, near Taiping plains, Wray 2410; Tapah, Wray 1299.

Selangor: Ulu Bubong, 400–600 ft., Kunstler 10206, 10615.

p. 760. **Planchonia valida**, Bl.

Syn. Pl. sundaica, Miq.

Perak: Tupai, plain, Wray 2336.

p. 763. **Melastoma decemfidum**, Roxb.

Perak: Gopeng, Scortechini 2123.

Selangor: Ulu Selangor, 800–1,000 ft., Kunstler 8754.

p. 765. **Melastoma imbricatum**, Wall.

Perak: Larut, Scortechini 162; Gopeng, Kunstler 444 and 6023.

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Selangor: Ulu Kerling, 400–600 ft., Kunstler 8696.
P. P. (Pahang Path) 2,500–3,000 ft., Kunstler 10946.

p. 767. **Oxyspora stellulata**, King.

Perak: Larut, Kunstler 2851; Gopeng, Kunstler 418, unlocalized, Scortechini 249[a] in part.

p. 768. **Oxyspora floribunda**, Ridl.

Syn. Anerinclistus floribundus, King.

Perak: Unlocalized, Scortechini in part 249.

p. 770. **Allomorphia exigua**, Bl.

Perak: Selama, Kunstler 3106; Taiping, Scortechini 227; Gunong Arang Para, Scortechini 583; Blanja, Wray 160; Gopeng, Kunstler 450.

Allomorphia alata, Scort.

Perak: Maxwell's hill, Scortechini 236.

p. 777. **Phaulanthus Curtisii**, Ridl.

Syn. Aneŗincleistus Scortechini, King.

Perak: Larut garden road, Scortechini 51[a]; Taiping, Scortechini 450.

p. 778. **Campimia Wrayi**, Ridl.

Syn. Allomorphia Wrayi, King.

Perak: Sungei Larut, plains, Wray, 248[b]; Maxwell's hill, 2,000 ft., Scortechini 425; Larut, Scortechini 50.

p. 780. **Sonerila erecta**, Jack.

Perak: Gunong Bujong Malaka, Scortechini 1605.

p. 781. **Sonerila hirsuta**, Ridl.

Syn. Sonerila tennifolia, varhirsuta.

Perak: Top of Gunong Bubu, 5,080–5,434 ft., Kunstler 7406.

p. 782. **Sonerila albiflora**, Stapf.

Perak: Gunong Bujong Malaka, Scortechini 1886.

p. 783. **Sonerila rudis**, Stapf.

Perak: Maxwell's hill, Scortechini 422; Gunong Batu Puteh, 4,500 ft., Wray 260.

p. 784. **Sonerila repens**, Stapf.

Perak: Gunong Bujong Malaka, Scortechini 1911.

p. 787. **Sonerila capitata**, Stapf.

Perak: Gunong Bujong Malaka, Scortechini 1887.

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p. 791. **Sonerila brachyantha**, Stapf.

Perak: Gunong Bujong Malaka, 1,000–1,500 ft., Kunstler 7179.

Sonerila macrophylla, Stapf and King.

Perak: Unlocalized, Scortechini.

p. 792. **Phyllagathis tuberculata**, King.

Perak: On Gunong Bujong Malaka, 2,500–3,000 ft., Kunstler 7233.

p. 793. **Phyllagathis Griffithii**, King.

Perak: Taiping, Scortechini 170; Gopeng, Kunstler 694.

Phyllagathis Scortechinii, King.

Perak: Maxwell's hill, Scortechini 269^{b}; Gopeng, Kunstler 4287.

p. 794. **Phyllagathis hispida**, King.

Perak: Gunong Batu Puteh, 6,700 ft., Wray Nos. 337 and 1021.

Phyllagathis rotundifolia, Bl.

Perak: Maxwell's hill, Scortechini 341 and 489; Larut hill, Scortechini 53; Tapah, 200 ft., Wray 494.

p. 796. **Dissochæta annulata**, H.f.

Perak: Maxwell's hill, Scortechini 234.

p. 797. **Dissochaeta gracilis**, Bl.

Perak: Taiping, Scortechini 127; Relau Tujor, Wray 1795; Gopeng, Kunstler 657.

p. 798. **Dissochaeta celebica**, Bl.

Perak: Larut, Scortechini 10, 226 and 1469.

Dissochaeta Scortechinii, King.

Perak: Taiping, Scortechini 54.

Dissochaeta anomala, King.

Perak: Larut, 500–800 ft., Kunstler 2758.

Selangor: Ulu Bubong, Kunstler 10468.

p. 799. **Anplectrum lepidosetosum**, King.

Perak: Gopeng, Scortechini 2106. Mr. Burkill is of opinion that A. lepidosetosum is beyond all doubt A. annulatum, Triana.

p. 800. **Anplectrum anomalum**, King.

Selangor: Ulu Bera, Kunstler 10357.

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p. 801. **Medinella scandens**, King.

Perak: Taiping, Scortechini 86 and 150; Larut hills, 100–1,500 ft., Kunstler 1814.

p. 802. **Medinella heterantha**, King.

Perak: Maxwell's hill, Scortechini 341.

Medinella heterantha, King var. latifolia, King.

Perak: Batang Padang District, 3,000–4,000 ft., Kunstler 8017.

p. 803. **Medinella Scortechinii**, King.

Perak: Maxwell's hill, 3,000 ft., Scortechini 307, and Wray 1739; Taiping, Scortechini 478, Gunong Arang Para, Scortechini 622.

p. 804. **Medinella Perakensis**, King.

Perak: Maxwell's hill, Scortechini 410.

p. 805. **Pachycentria tuberculata**, Korth.

Perak: Gunong Arang Para, Scortechini 550; Gopeng, Scortechini 1961; Tapah, Wray 1303.

p. 807. **Astronia smilacifolia**, Triana.

Perak: Gunong Arang Para, Scortechini 685; Gunong Bujong Malaka, Scortechini 1875.

p. 808. **Pternandra cœrulescens**, Jack.

Perak: Krian, Scortechini 1372; near Gunong Bubu, 300–500 ft., Kunstler 7392—Batang Padang District, 300–600 ft., Kunstler 7864.

Pternandra Jackiana, Ridl.

Syn. Pternandra cœrulescens var Jackiana.

Perak: Larut, Scortechini and Kunstler 1835; Waterfall hill, Wray 2631; Taiping, Scortechini 530; Relau Tujor, Wray 1818; Gopeng, Kunstler 839.

Pternandra capitellata, Jack.

Perak: Larut, Scortechini 43; Waterfall 300 ft, Taiping, Wray 1971.

Dindings: Pangkor, Scortechini 1043.

p. 809. **Pternandra paniculata**, Bth.

Perak: Maxwell's hill, Scortechini 1303.

p. 811. **Memecylon oligoneuron**, Bl.

Perak: Maxwell's hill, Scortechini 1309.

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p. 812. **Memecylon dichotomum,** Cl.

Perak: Larut, 3,000–4,000 ft., Kunstler 5297, 6474.

p. 813. **Memecylon heteropleurum,** Bl.

Perak: Larut, 500–800 ft., Kunstler 5090, 6621; Gunong Arang Para, Scortechini 595; Sungei Raya, Kunstler 1110; Gopeng 500–800 ft., Kunstler 6075.

Selangor: Ulu Kerling, Bamboo forests, Kunstler 8589.

Memecylon heteropleurum, var. olivacea.

Perak: Larut, Kunstler 3778; Gopeng, Kunstler 500; Relau Tujor, Wray 2202; Tapah, Wray 1310.

Selangor: Ulu Bubong.

p. 814. **Memecylon oleæfolium,** Bl.

Perak: Gopeng, Scortechini 2069.

p. 817. **Memecylon cinereum,** King.

Perak: Selama, Kunstler 3143; Maxwell's hill, Scortechini 394; Gopeng, Scortechini 2035.

Selangor: Ulu Kal 10758.

Memecylon lævigatum, Bl.

Perak: Taiping plain, Wray 2091.

Memecylon acuminatum, Sm.

Perak: Larut, 300–1,000 ft., Kunstler 3458 and 6754.

p. 819. **Memecylon intermedium,** Bl.

Dindings: Pangkor, Scortechini 1036. [Perak in Ridley's Flora should evidently be Dindings.]

p. 822. **Crypteronia Griffithii,** Cl.

Perak: Larut, up to 1,500 ft., Kunstler 3473 and 4152; Waterfall hill, Taiping, Wray 2589 and 2638.

Selangor: Ulu Kerling, 500–800 ft., Kunstler 8592.

p. 824. **Duabanga sonneratioides,** Ham.

Perak: Taiping, Scortechini, Gopeng, 300–500 ft., Kunstler 5912.

p. 825. **Sonneratia acida,** L.f.

Perak: Kurau river, Scortechini.

Sonneratia Griffithii, Kurz.

Syn. Sonneratia acida, var Griffithii, King.

Dindings: Pangkor, Scortechini 967.

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p. 830. **Casearia grewiaefolia**, Vent.

Perak: Gopeng, Scortechini 2005.

p. 831. **Casearia esculenta**, Roxb.

Perak: Ulu Kenas, Scortechini 765; Maxwell's hill, Scortechini 496; Larut, 4,000–4,600 ft., Kunstler 7001; Gunong Arang Para, Scortechini 804; Gopeng, Kunstler 4669 and 5887; Gunong Batu Puteh, Wray 431.

Selangor: Ulu Bubong, 10008, 10115, 10550 and 10869; Ulu Kerling, Kunstler 8663; Ulu Kal 10757.

p. 834. **Osmelia Maingayi**, King.

Perak: Gunong Bubu, in dense jungles, Kunstler 7660; on Gunong Bujong Malaka, 200–500 ft., Kunstler 7045.

Selangor: Ulu Bubong, 500–700 ft., Kunstler 10017; Ulu Kal, 400–600 ft., Kunstler 10981.

Homalium longifolium, Bth.

Perak: Taiping, Scortechini 482; Gopeng, Scortechini 2036; Batang Padang river, 200–500 ft., Kunstler 7855.

Selangor: Ulu Kal, 1,000–1,800 ft., Kunstler 10763; Ulu Bubong, Kunstler 10230.

p. 837. **Homalium grandiflorum**, Bth.

Perak: Blanja, Scortechini 1708.

p. 839. **Passiflora Horsfieldii**, Bl.

Perak: Kurau, Scortechini 2192.

p. 840. **Adenia nicobarica**, King.

Perak: Larut, 100 ft., Kunstler 2439; Assam Kumbang plains, Wray 2781; Gunong Arang Para, Scortechini 633.

p. 841. **Adenia populifolia**, Engl.

Perak: Batang Padang District, 500–600 ft., Kunstler 7963.

Selangor: Ulu Bubong, 400–600 ft., Kunstler Nos. 10308 and 10644.

Adenia acuminata, King.

Perak: Gopeng, Kunstler 1002 and 6168; Taiping plain, Wray 1745 and Scortechini 459; Gunong Arang Para, Scortechini 629.

Selangor: Ulu Bubong, Kunstler 10538.

p. 844. **Trichosanthes tricuspidata**, Lour.

Perak: Relau Tujor, Wray 4021; Maxwell's hill, Scortechini 376.

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p. 845. **Trichosanthes Wallichiana**, Wight.

Perak: Gunong Arang Para, Scortechini 600; Scortechini 508.

Trichosanthes Wawraei, Cogn.

Selangor: Ulu Bubong, Kunstler 10176.

Trichosanthes celebica, Cogn.

Perak: Larut, within 100 ft. above sea level, Kunstler 4033.

p. 848. **Momordica Clarkeana**, King.

Perak: Batu Kurau, Scortechini 1605.

Momordica subangulata, Bl.

Perak: Gunong Arang Para, Scortechini 599.

Momordica cochinchinensis, Sprengl.

Perak: Ulu Selama, Scortechini 1332; Relau Tujor, Wray 4037; Ayer Larut plain, Wray 1997; near Gunong Bubu, 300–500 ft., Kunstler 7723; Ulu Kenas, Scortechini 796.

p. 849. **Melothria affinis**, King.

Perak: Taiping, Scortechini 495; Sungei Raya, Kunstler 1069; Tapah, Wray 1404; Kuala Wok, Wray 850.

p. 855. **Begonia isoptera**, Dryand.

Perak: Gunong Ijuk (? G. Hijau), Scortechini 1271; Kuala Dipang, Scortechini 1827.

Selangor: Ulu Kal, Kunstler 10336.

p. 857. **Begonia thaipingensis**, King.

Perak: Larut, Scortechini 1479.

p. 858. **Begonia guttata**, Wall.

Perak: Batu Kurau, Scortechini 1595; Gunong Arang Para, Scortechini 571.

p. 860. **Begonia Scortechinii**, King.

Perak: There is only the manuscript note by Scortechini on his No. 1845 but the actual specimen is missing; Kunstler collected this on Gunong Bujong Malaka at a height of 2,000 ft. and his number is 7227.

Begonia Scortechini var. Kunstleriana, Ridl.

Syn. Begonia Kunstleriana, King.

Perak: In wet places on Gunong Bujong Malaka at 300–500 ft., Kunstler 7194.

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p. 863. **Begonia Maxwelliana**, King.

Perak: Maxwell's hill, 3,000 ft., Scortechini 372; Kuala Dipang, Scortechini 1798.

Begonia decora, Stapf.

Syn. Begonia praeclara, King.

Perak: Gunong Batu Puteh, 3,000–4,000 ft., Kunstler 8077 and Wray 318.

p. 873. **Aralia ferox**, Miq.

Perak: Larut, 2,000–3,000 ft., Kunstler 5059; Taiping, within 100 ft., Kunstler 8483; Batu Togoh, 200 ft., Wray 2155; Waterloo estate, Scortechini 501; Gopeng near water at 300–800 ft., Kunstler 1037 and 4434.

p. 875. **Schefflera lurida**, Ridl.

Syn. Heptapleurum luridum, King.

Perak: Gunong Ijuk (? G. Hijau) Scortechini 1191.

Schefflera cephalotes, Harms.

Syn. Heptapleurum cephalotes, Cl.

Perak: Maxwell's hill, Scortechini 391; Ulu Batang Padang, 4,700 ft., Wray 1542.

p. 876. **Schefflera Scortechinii**, Ridl.

Syn. Heptapleurum Scortechinii, King.

Perak: Gopeng, Scortechini 2008.

p. 877. **Schefflera tomentosa**, Ridl.

Syn. Heptapleurum tomentosum, Hassk.

Perak: Relau Tujor, Wray 2202; Waterfall hill Taiping, Wray 3152.

p. 878. **Schefflera scandens**, Ridl.

Syn. Heptapleurum scandens, S.

Perak: Taiping plains, Wray 2401; Port Weld, Scortechini 1552; Relau Tujor, Wray 1844 and 2880; Gopeng, 100 ft., Kunstler 4304.

Schefflera subulata, Ridl.

Syn. Heptapleurum subulatum, S.

Perak: Gunong Arang Para, Scortechini 573; Taiping, Scortechini; Gopeng, Kunstler 773; Kampar river, Kunstler 1102; Kuala Wok, Wray 872.

p. 879. **Schefflera affinis**, Ridl.

Syn. Heptapleurum affinis, King.

Perak: Maxwell's hill, Taiping, 3,000 ft., Scortechini 486.

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p. 880. **Schefflera heterophylla,** Harms.

Syn. Heptapleurum heterophyllum, Seem.

Perak: Gunong Arang Para, Scortechini 664; Kuala Dipang, Scortechini 145.

Selangor: Ulu Selangor, Kunstler 8640.

p. 884. **Dendropanax Maingayi,** King.

Perak: Maxwell's hill, Scortechini 308.

p. 886. **Arthrophyllum pinnatum,** Clarke.

Perak: Maxwell's hill, Scortechini 352; Ulu Batang Padang, 4,900 ft., Wray 1495; Gunong Batu Puteh, 6,700 ft., Wray 330. Besides these, there are specimens from Penang, Malaka and Negri Sembilan in Sibpur.

p. 887. **Brassaiopsis palmata,** Kurz.

Perak: Maxwell's hill, Scortechini 17[a] and 206; Larut hills, Kunstler 2598, Larut, Scortechini 146.

p. 890. **Mastixia Clarkeana,** King.

Perak: Larut, within 100 ft., Kunstler 6876; Gunong Arang Para, Scortechini 869.

Selangor: Ulu Bubong, 400–600 ft., Kunstler 10861.

p. 891. **Mastixia Scortechinii,** King.

Perak: Gopeng, Scortechini 1971.

Mastixia gracilis, King.

Perak: Near Ulu Batang Padang, 4,900 ft., Wray 1528.

p. 892. **Alangium Lamarckii,** Thw.

Perak: Dipang, Scortechini 1837.

p. 894. **Alangium uniloculare,** King.

Perak: Larut, Scortechini 1484; Kuala Dipang, 300–500 ft., Kunstler 828.

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p. 8. **Anthocephalus indicus**, A. Rich.

Syn. A. cadamba, Miq.

Perak: Larut, Kunstler 6913.

p. 9. **Nauclea synkorynes**, Korth.

Selangor: Open Jungles of Ulu Bubong, Kunstler 10276.

p. 14. **Uncaria Wrayi**, King.

Perak: Taiping plains, Wray 2383.

p. 15. **Uncaria jasminiflora**, H.f.

Perak: Gopeng, Kunstler 4619; Batang Padang District, Kunstler 7860.

p. 23. **Argostemma subinæquale**, Benn.

Perak: Larut, Kunstler 2242.

p. 24. **Argostemma pictum**, Wall.

Perak: Selama, Kunstler 3105 and 3110; Maxwell's hill, Scortechini 310.

Selangor: Ulu Bubong, Kunstler 10585 and 10586.

Argostemma Yappii, King.

Perak: Ulu Selama, Scortechini 1334; Gunong Batu Puteh, Scortechini 245.

Argostemma nutans, King.

Perak: Taiping, Scortechini 157; Gunong Bujong Malaka, Kunstler 7910; Gunong Batu Puteh, Kunstler 3060; Gopeng, Kunstler 587; Batang Padang District, Kunstler 7802; Tapah, Wray 843 and 1296.

Argostemma nutans, King var. glabra.

Perak: Maxwell's hill, 3,000 ft., Scortechini 297; Larut, Kunstler 1985 and Taiping, Wray 2646.

p. 25. **Argostemma urticifolium**, King.

Perak: Unlocalized, Scortechini.

p. 26. **Argostemma unifolium**, Benn.

Penang: Kunstler 2276.

Selangor: P. P. (Pahang Path), Kunstler 10942.

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Argostemma elatostemma, H.f.

Penang: Kunstler 1605 and 1752.

Perak: Larut, Kunstler 2131.

Argostemma elatostemma, H.f. var. obovata, King.

Selangor: Near Ulu Bera, Kunstler 10815.

Argostemma unifolioide, King.

Perak: Maxwell's hill, Scortechini 282 and 384; Gunong Batu Puteh, Wray 410.

Argostemma unifolioide, var. glabra, King.

Perak: Gunong Ijuk, Scortechini 1204.

p. 28. **Argostemma involucratum**, Hemsl.

Perak: Larut, Kunstler 2204 and 2820; Gunong Batu Puteh, Kunstler 8062.

Argostemma involucratum, Hemsl. var. glabrum, Ridl. (var. glabrescens King).

Perak: Maxwell's hill, 3,000 ft., Scortechini 21[a], 303 and 455; Larut, Kunstler 2714.

p. 29. **Argostemma spinulosum**, Cl.

Perak: Taiping, Scortechini 454; Larut, Kunstler 2789, 2892 and 7520; Maxwell's hill, Wray 2953, Scortechini 500; Gunong Bubu, Wray 3936; Gunong Batu Puteh, Wray 463 and 1083.

p. 30. **Argostemma subcrassum**, King.

Perak: Gunong Ijuk, Scortechini 1205; Gopeng, Scortechini 1912.

Selangor: Ulu Bubong, Kunstler 10154.

p. 31. **Argostemma bicolor**, King.

King based his species on a Curtisian specimen. He quotes none else and we have no specimen other than Curtis.

Argostemma oblongum, King.

Perak: Taiping, Scortechini 159; Gopeng, Kunstler 907.

Selangor: Ulu Bubong, Kunstler 10261; near Ulu Slim, Kunstler 10675.

Johore: Gunong Pulai, King.

p. 32. **Argostemma ophirense**, Maing.

Perak: Relau Tujor, Wray 2197.

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p. 33. **Argostemma Curtisii**, King.

Perak: Gunong Bujong Malaka, Scortechini 1890.

Argostemma Hookeri, King.

Penang: Kunstler 1147 and 1756.

Johore: Jaffaria, King.

p. 34. **Argostemma Wrayi**, King.

Perak: Gunong Batu Puteh, Wray 1012.

p. 36. **Ophiorrhiza major**, Ridl.

Syn. Ophirorrhiza erubescens, King (non Wall).

Perak: Ulu Selama, Scortechini 1313; Larut, Kunstler 2187; Gopeng, Kunstler 5853 and 7119; Relau Tujor, Wray 4050; Gunong Bujong Malaka, Kunstler 7186.

p. 39. **Ophiorrhiza communis**, Ridl.

Syn. Ophiorrhiza mungas, King (in part).

Perak: Taiping, Scortechini 49 and 52.

p. 40. **Ophiorrhiza tenella**, King.

Perak: Gopeng, Kunstler 546.

Ophiorrhiza rugosa, Wall.

Perak: Batang Padang Valley, 3,900 ft., Wray 1482.

p. 41. **Ophiorrhiza Kingiana**, Ridl.

Perak: Gopeng, Kunstler 5853.

Ophiorrhiza tomentosa, Jack.

Penang: Kunstler 1314, 1914 and 4846; Kunstler used 'Larut, Perak' labels throughout his collections and the duplicates distributed from Sibpur had no notes on them. Hence Ridley mentioned ['Perak' (Kunstler)].

Ophiorrhiza fasciculata, Don.

Perak: Larut, Kunstler 2205; Jenah, Wray 1989.

p. 46. **Hedyotis capitellata**, Wall.

Perak: Larut, Scortechini 80[a]; Gunong Bubu, Kunstler 8327; Sungei Raya, Kunstler 883; Tapah, Wray 1367; Gunong Arang Para, Scortechini 530[a].

p. 48. **Hedyotis coronata**, Wall.

Syn. Hedyotis connata, H.f.

Perak: Unlocalized Scortechini.

Hedyotis glabra, R. Br.

Penang: Kunstler 1370.

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Hedyotis stipulata, R. Br.

Perak: Upper part of the valley of Batang Padang District, 2,000 ft., Wray 1450.

p. 49. **Hedyotis auricularia**, L.

Perak: Taiping, Scortechini 113 and unlocalized Wray 3078 and 3085. *Singapore:* Kunstler 88.

Hedyotis vestita, R. Br.

Perak: Gunong Pondok, Kunstler 213; Gopeng, Kunstler 4574; Tapah, Wray 1351.

p. 50. **Hedyotis Havilandi**, King.

Perak: Gunong Inas, Wray 4062; without locality, Scortechini.

Selangor: Ulu Bubong, Kunstler 10254.

Hedyotis congesta, *Wall.*

Perak: Blanda Mabok, plains, Wray 3982; Larut, Scortechini 77, Kunstler 5535; Taiping, Scortechini 78; Gunong Arang Para, Scortechini 564; Gopeng, Kunstler 520; Tapah, Wray 825 and 1360. *Rhio archipelago:* Bukit Brugorang, Kunstler 295.

Selangor: Ulu Bubong, Kunstler 10121.

p. 51. **Hedyotis nitida**, W and A.

Perak: Unlocalized Scortechini.

p. 52. **Hedyotis pinifolia**, Wall.

Dindings: Pangkor, Scortechini 1012.

p. 53. **Oldenlandia paniculata**, Linn.

Perak: Taiping, Scortechini 1107.

Oldenlandia dichotoma, H.f.

Penang: Kunstler 1282.

p. 54. **Oldenlandia Heynei**, Don.

Perak: Assam Kumbang plains, Wray 1931.

Oldenlandia diffusa, Roxb.

Perak: Larut, Kunstler 1881; Gunong Arang Para, Scortechini 701.

p. 56. **Lucinæa paniculata**, King.

Perak: Larut, Kunstler 2164; Maxwell's hill, Scortechini 275.

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Lucinæa Ridleyi, King.

Perak: Larut, Kunstler 2162 and 5052; Gunong Arang Para, Scortechini 506[a] and 639; Gunong Batu Puteh, Wray 446 and 1113; Batang Padang District, Kunstler 7836.

Lucinæa membranacea, King.

Perak: Blanda Mabok, plains, Wray 2998; Maxwell's hill, 3,000 ft., Scortechini 283; Relau Tujor, Wray 1777; Larut garden Road, Scortechini 49[a]; Tapah, Wray 832.

Lucinæa morinda, DC.

Perak: Larut, Kunstler 5498; Taiping, Kunstler 8482; Waterfall hill, Taiping Wray 2405; Briah, Larut plains, Wray 4211; Gopeng, Kunstler 4645.

p. 57. **Lecanthus erubescens**, Jack.

Perak: Larut, Kunstler 1949 and 2135; Taiping plains, Wray 2649; Assam Kumbang, Wray 1936.

Selangor: Ulu Bubong, Kunstler 10153.

p. 58. **Mussænda mutabilis**, H.f.

Perak: Waterfall hill, Taiping, Wray 91; Larut, Kunstler 1856, 4999; Gunong Arang Para, Scortechini 770; Sungei Raya, Kunstler 855; Gopeng, Kunstler 3276 and 4255; Relau Tujor, Wray 1846.

p. 59. **Mussænda Wrayi**, King.

Perak: Larut, Kunstler 1960 and 5353; Waterfall hill, Taiping, Wray 2583; Relau Tujor, Wray 1788; Ayer Larut, Wray 40; Gopeng, Kunstler 685.

Selangor: P.P., Pahang Path, Kunstler 10943.

Mussænda malaccensis, Ridl.

Syn. Mussaenda macrophylla, King (non-Wall).

Perak: Gopeng, Kunstler 6016.

Selangor: Ulu Kal, Kunstler 10745.

p. 60. **Mussænda villosa**, Wall.

Perak: Maxwell's hill, Taiping, Scortechini 240 and 243.

p. 62. **Mussænda cordifolia**, H.f.

Perak: Taiping, Scortechini 458.

p. 63. **Adenosacme malayana**, Wall.

Syn. Adenosacme longifolia, King, non-Wall.

Perak: Gunong Chabang, Scortechini 21; Waterfall Taiping; Wray 2318; Sungei Raya, Kunstler 1001; Gopeng, Kunstler 595.

Singapore: Bukit Timah, King.

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Mycetia Scortechini, Ridl.

Syn. Adenosacme Scortechinii, King and Gamble.

Perak: Without number and locality, Scortechini; Larut, Kunstler 2223; Batang Padang valley, Wray 1474.

p. 64. **Aulacodiscus premnoides,** H.f.

Syn. Aulacodiscus Maingayi, King.

Perak: Ulu Selama, Scortechini 1357; Larut, Kunstler 2316 and 2392; Waterfall Taiping, Wray 2562; Sungei Larut plains, Wray 2449; Gopeng, Kunstler 1086 and Scortechini 2004.

Selangor: Ulu Kerling, Kunstler 8568.

p. 65. **Urophyllum villosum,** Jack and Wall.

Perak: Larut, Kunstler 2563; Waterfall hill, Taiping, Wray 2634; Relau Tujor, Wray 1780; Gunong Arang Para, Scortechini 712; Sungei Raya, Kunstler 752; Gopeng, Kunstler 526, Scortechini 1983.

p. 66. **Urophyllum macrophyllum,** Korth.

Perak: Larut, Kunstler 2838, 2948 and 2964; Maxwell's hill, 3,000 ft., Scortechini 267; Gunong Arang Para, Scortechini 715; Relau Tujor, Wray 2201.

Urophyllum hirsutum, H.f.

Perak: Larut, Kunstler 3236; Larut, Scortechini 84; Sungei Larut, Wray 2488; Blanja, Wray 152; Tapah, Wray 1305.

p. 67. **Urophyllum ferrugineum,** King and Gamble.

Perak: Taiping, Scortechini 205; Larut, Kunstler 4112; Waterfall hill, Taiping, Wray 2065; Gunong Bubu, Wray 3933; Gopeng, Kunstler 780.

Urophyllum Streptopodium, Wall.

Perak: Gunong Arang Para, Scortechini 577 and 671.

Urophyllum corymbosum, Korth.

Syn. Urophyllum macrophyllum, var. corymbosum, King.

Perak: Larut, Kunstler 2263, 2298 and 2409.

p. 68. **Urophyllum trifurcum,** Pearson.

No specimen in Sibpur. Singapore has a specimen Scort. No. 344, without locality.

p. 70. **Brachytome Scortechinii,** King.

Perak: Gunong Ijuk, Scortechini 1215; Larut, Kunstler 2136 and 2930; Taiping, Scortechini 14; Maxwell's hill, Scortechini 237; Gunong Batu Puteh, Wray 950.

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p. 71. **Randia oocarpa,** Ridl.

Syn. Randia dumetorum, King (Non Lamk.).

Perak: Briah Larut, Wray 4209; Larut, Kunstler 2012, 3168 and 6495; Taiping, Scortechini 95 and 98; Relau Tujor, Wray 2599[a]; Gopeng, Scortechini 1933.

p. 72. **Randia perakensis,** King and Gamble.

Perak: Larut, Kunstler 7450; Gunong Bubu, Kunstler 8356.

p. 73. **Randia penangiana,** King and Gamble.

Perak: Larut, Scortechini 1538.

Randia fasciculata, DC.

Perak: Kuala Dipang, Scortechini 1802; Upper Perak, 300 ft., Wray 3467.

p. 74. **Randia Kunstlerii,** King.

Perak: Taiping, Scortechini 485.

N.B.—King quotes in his materials for a flora of the Malayan Peninsula No. 2683 which is in the herbarium, Calcutta. But it has apparently no connection to No. 485 of Scortechini, which is the true Randia Kunstlerii, King. To me it seems to be a different plant. No. 4335 Kunstler cannot be found here. 4335 is not also found both at Kew and Singapore.

Randia Curtisii, King and Gamble.

Perak: Besides No. 8480 of Kunstler from Taiping, there are Nos. 3305, 4882, 6507 and 6814 from Larut; Relau Tujor, Wray 2611.

p. 75. **Randia auriculata,** Schum.

Perak: Taiping plains, Wray 2647; Larut, Kunstler 4034, 6204 and 6467; Assam Kumbang, Wray 1994; Chanderiang, Kunstler 5670.

Randia, densiflora, Benth.

Perak: Taiping, Kunstler 8474; Gunong Arang Para, Scortechini 386, 811; Gopeng, Kunstler 6086; Kuala Dipang, Scortechini 149[a].

Selangor: Ulu Bubong, Kunstler 10324.

p. 76. **Randia Forbesii,** King and Gamble.

Perak: Ulu Selama, Scortechini 1308.

Selangor: Ulu Bubong, Kunstler 10001.

Randia binata, King and Gamble.

Perak: Batu Togoh, Wray 2134.

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p. 77. **Randia impressinervia**, King.

Perak: Larut, Kunstler 2505 and 4894; Taiping, Scortechini 254; Batu Togoh, Wray 2158.

p. 78. **Randia Scortechinii**, King and Gamble.

Perak: Larut, Kunstler 3696 and 6786; Taiping, Scortechini 170; Tupai, Wray 3081; Gunong Arang Para, Scortechini 574; Gopeng, Kunstler 4335 and 4485; Gunong Bujong Malaka, Kunstler 7205; Tapah, Wray 187 and 1386.

Selangor: Ulu Bubong, Kunstler 10131.

Randia macrophylla, H.f.

Perak: Larut, Scortechini 1479, Wray 1632; Tapah, Wray 1380; Gopeng, Kunstler 769; Briah, Wray 4214.

p. 79. **Randia stenopetala**, Ridl.

Syn. Gardenia stenopetala, King.

Perak: Larut, Scortechini 1446, Kunstler 4156; Gopeng, Kunstler 4265.

p. 80. **Gardenia tentaculata**, H.f.

Perak: Taiping, Scortechini 69; Simpang, Wray 2036; Batang Padang District, Kunstler 7851.

p. 82. **Gardenia tubifera**, Wall.

Perak: Larut, Kunstler 5581 and 6385; Banks of Bernam river, Kunstler 8852 (April, 1886); Kuala Dipang, Scortechini 1775.

p. 83. **Gardenia speciosa**, H.f.

King's and Hooker's descriptions of this species agree to some extent with each other in having a calyx tube 1·25″ long, an obovate leaf, either obtuse or slightly cuspidate, though Ridley seems to think otherwise. King quotes several sheets in support of his and the examination of those sheets, here, leaves me no doubt that his (King's) description of this species is nearer Hooker's description of the same than Ridley's description of G. elata. The latter is said to have a calyx tube of 3″ long. There does not seem to be any good ground for supposing that G. speciosa H.f. (King) is nearer G. elata and hence it can find no place in the local flora, but I am inclined to take it as occurring in Malayan Peninsula from the sheets of it mentioned below.

Perak: Gopeng, Kunstler 4516 and 5830; Ulu Selama, Wray 4265. (Ridley has quoted this under G. elata, but the calyx tube is 1·2″ long here.)

Selangor: Ulu Bubong, Kunstler 10180.

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p. 85. **Petunga venulosa**, H.f.

Perak: Sungei Larut plains, Wray 2355; Larut, Kunstler 2594 and 3156.

p. 86. **Diplospora Beccariana**, King.

Perak: Selama, Kunstler 3142.

Diplospora malaccensis, H.f.

Perak: Larut, Kunstler 7502, Scortechini 94; Gopeng, Kunstler 5829 and 6084.

Selangor: Ulu Kerling, Kunstler 8647; Ulu Bubong, Kunstler 10112 and 10188.

p. 87. **Diplospora Wrayi**, King and Gamble.

Perak: Larut, Kunstler 2366, 2782, 5277 and 6253.

Diplospora Kunstleri, King and Gamble.

Perak: Larut, 2,000–2,500 ft., Kunstler 3211; Maxwell's hill, Scortechini 298.

p. 91. **Ixora Brunonis**, Wall.

Perak: Upper Perak, Wray 3478.

Ixora Kingstoni, H.f.

Perak: Larut, Kunstler 3167 and 4200; Sungei Raya, Kunstler 871; Gopeng, Scortechini 2030.

p. 92. **Ixora multibracteata**, Pearson.

Scortechini from Perak without locality and number.

Ixora arguta, Br.

Perak: Larut, Kunstler 2072; Batu Togoh, Wray 2135; Sungei Raya, Kunstler 870.

p. 93. **Ixora congesta**, Roxb.

Perak: Larut, Kunstler 2448, 2865, 2867, 3982 and 3998.

Ixora Lobbii, Loud.

Perak: Upper Perak, Wray 3449; Taiping, Scortechini 2 and 96; Maxwell's hill, Scortechini 349; Larut, Kunstler 2374, 2408, 3828 and 4196; Gopeng, Kunstler 5968; Chanderiang, Kunstler 5626; Kota Bahru, Kunstler 407; Gunong Batu Puteh, Wray 476 and 952.

Ixora Lobbii, var. angustifolia, King and Gamble.

Perak: Larut, Kunstler 2718; Larut hill garden, Wray 519; and an unnumbered and unlocalized sheet of Scortechini.

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Ixora fulgens, Roxb.

Ridley has excluded this from his Malayan Flora evidently on the assumption that what King had quoted in support of this species were all Ixora Lobbii. But an examination of all the sheets in this Herbarium have revealed these facts. Firstly, what Hooker has described in F.B.I. as Ixora fulgens, Roxburgh, is only Ixora Lobbii, Loud., and those sheets he has quoted from Tenasserim and Malaya, namely, Maingay 845 and Griffith 2985 are all Ixora Lobbii; secondly, King is right in reducing Hooker's I. fulgens of F.B.I. to Ixora Lobbii and he agrees with Ridley so far. It is also true that the Perak specimens quoted by King under Ixora fulgens are entirely different from Hooker's Tenasserim specimens, described as Ixora fulgens, but they agree well with Roxburghian Ixora fulgens, a native of Moluccas. There is a good figure of Ixora fulgens, Roxburgh, in Rumphius's Flora Amboina, Vol. IV, pl. 46, with which all the Perak specimens quoted by King almost match. The only point of difference, if it is a difference worth considering, is that the corolla lobes in King's sheets are not so lanceolate as described by Roxburgh, but are only shortly acute. There is also another point against the exclusion of this species from the Malayan Flora in that Kunstler noted on the ticket that the plant named I. fulgens by King is a small tree 15–30 ft. high, whereas I. Lobbii described by Ridley is only a shrub 6–8 ft. high.

Therefore, I think the Perak specimens quoted by King are sufficiently distinctive to retain them under I. fulgens, Roxburgh, and to include them under the Malayan Flora proper. Specimens examined are from Larut, Kunstler's Nos. 2949, 5075 and 5522; without locality, Wray 3024 and Scortechini without locality.

p. 94. **Ixora stenophylla,** Ridl.

Syn. Ixora Lobbii, var. angustifolia, King and Gamble (in part).

Perak: Gunong Bujong Malaka, Scortechini 1893.

Ixora stricta, Roxb.

Perak: Larut, Kunstler 2247; Gunong Arang Para, Scortechini 616; without locality, Wray 3393 and 3448.

Ixora humilis, King and Gamble, var. Scortechinii Ridl.

Syn. Ixora Scortechinii, King and Gamble.

Perak: Ulu Selama, Scortechini 1277, at 500 ft., Wray No. 4157, between 300–500 ft., and Kunstler 3120. (2 sheets) unnumbered and unlocalized sheets of Scortechini.

Note.—It is puzzling to notice that King has quoted Wray's No. 4157 both under his Ixora humilis and Ixora

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Scortechinii (*vide* King's materials, vol. Gamopetaleæ, p. 154). But there seems reason enough for this anomaly because of these two duplicate sheets, one has a greater number of veins than the other. Again under Kunstler's No. 3120, there are two sheets differing in the number of veins, varying according as the leaves are bigger or smaller. It is plain enough, therefore, that King created the two species Ixora humilis and Ixora Scortechinii out of the same individual, which simply varied within itself according to the conditions of life it found itself in at the time of collection. Ridley, following King, improved it by reducing King's Ixora Scortechinii to a variety of Ixora humilis. Further he has quoted Wray's sheet only once, i.e. under Ixora humilis and not under the variety. There is only Scortechini's No. 1277 from Perak that matches the description of Ixora Scortechinii by King besides Ridley's Nos. 6992 and 7186.

But after all it may only be an edaphic and geographical form of Ixora humilis and I don't see sufficient points to create either a new species or a new variety in this case. It would have been better if it is only mentioned under Ixora humilis that the species is much variable within itself.

p. 95. **Ixora concinna,** Br.

Perak : Taiping, Scortechini 174; Larut, Kunstler 3068 and 3530; Gopeng, Kunstler 4639; Chanderiang, Kunstler 5648; Batang Padang District, Kunstler 7942.

Ixora pendula, Jack.

Perak : Ulu Selama, Scortechini 1358; Larut, Kunstler 2843, 2879, 2992, 3046, 3985 and 5253; Maxwell's hill, Wray 2302; Assam Kumbang, Wray 2791.

Selangor : Ulu Bubong, Kunstler 10900.

Ixora pendula var. opaca, Ridl.

Syn. Ixora opaca, Br.

Perak : Larut, Kunstler 2699, 2805, 2829, 2917 and 4118.

p. 96. **Ixora diversifolia,** *Wall.*

Perak : Taiping, Scortechini 169; Gopeng, Kunstler 5896; Chanderiang, Kunstler 5691 and 5737.

p. 98. **Ixora undulata,** *Roxb.*

Note.—Calcutta Herbarium has no other specimen except Wray's from Gunong Bubu. Mr. Burkill says that Mr. Ridley transferred Scortechini's No. 168, placed by King under I. diversifolia, to I. undulata.

p. 100. **Pavetta indica,** Linn.

Perak : Taiping, Scortechini 81; Larut, Kunstler 3863 and 4183; Gopeng, Kunstler 4715.

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p. 104. **Tarenna longifolia**, Ridl.

Syn. Webera longifolia, H.f.

Perak: Larut, Kunstler 2737, 3825, 6220 and 6632; Waterfall hill, Taiping, Wray 2081; Taiping ?, Scortechini 228.

Selangor: Ulu Slim, Kunstler 10662.

Tarenna grandifolia, Ridl.

Syn. W. grandifolia, H.f.

Perak: Sungei Raya, Kunstler 763; unlocalized, Wray 3377.

p. 105. **Tarenna odorata**, Ridl.

Syn. W. odorata, Roxb.

Perak: Larut, Kunstler 3807 and 4236; Sungei Larut, below Taiping, Kunstler 3121; Gunong Batu Puteh, Wray 1147.

Tarenna Yappii, Ridl.

Syn. W. yappii, King.

Perak: Birch's hill, Taiping, Wray 10.

Tarenna Wrayi, *Ridl.*

Syn. W. Wrayi, King.

Perak: Sungei Larut plains, Wray 2477.

p. 106. **Tarenna Wallichii**, Ridl.

Syn. W. Wallichii, H.f.

Perak: Maxwell's hill, Scortechini 429.

Tarenna stellulata, Ridl.

Syn. W. stellulata, H.f.

Perak: Gopeng, Kunstler, 973, 4309, 5951 and 6169; Gunong Batu Puteh, Wray 458 and 1094.

Selangor: Ulu Bubong, Kunstler 10228.

Tarenna Curtisii, Ridl.

Syn. W. curtisii, King.

Perak: Gunong Inas, Wray 4113; unlocalized, Wray 3612.

p. 108. **Stylocoryne fragrans**, Bl.

Perak: Larut, Kunstler 6368; Gunong Arang Para, Scortechini 556[a]; Batu Karau, Scortechini 1650; Taiping, Wray 1721; growing on the banks of the Perak river, near Durian Sabatang, Kunstler 1031.

Selangor: Ulu Bubong, Kunstler 10299 and 10462.

p. 109. **Stylocoryne mollis**, Wall.

Perak: Chanderiang, Kunstler 5725; Tapah, Wray 1276.

Selangor: Ulu Kerling, Kunstler 8638 and 8664.

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p. 110. **Stylocoryne adpressa**, King.

Perak: Gunong Arang Para, Scortechini 569 and 636; Taiping, Scortechini 26; Assam Kumbang, Wray 2790; Gunong Bubu, Wray 3930.

Stylocoryne Maingayi, King.

Perak: Gopeng, Kunstler 1021, 4610.

Selangor: Near Ulu Bubong, Kunstler 10754.

p. 112. **Gardeniopsis longifolia**, Miq.

Larut, Kunstler 2361 and 2850; Gunong Ijuk, Scortechini 1234.

p. 113. **Timonius peduncularis**, Ridl.

Syn. Timonius jambosella, King (Non Thw.).

Perak: Gunong Arang Para, Scortechini 684; Larut, Kunstler 2607; Relau Tujor, Wray 1840; Gunong Batu Puteh, Wray 1623 and 1628.

p. 116. **Timonius Wallichianus**, Valeton.

Syn. Timonius Rumphii, King (Non DC.).

Perak: Sungei Larut, plains, Wray 2282; Larut, Scortechini 1539; Tapah, Wray 1274.

Selangor: Ulu Bubong, Kunstler 10077.

Timonius Wallichianus, Valeton. var. penangianus.

Perak: Ulu Batang Padang, Wray 1499.

Prismatomeris malayana, Ridl.

Syn. Prismatomeris albidiflora, King (Non Thw.).

Kedah: Kunstler 1710.

Penang: Kunstler 1468, 1567; Pulau Jerajak, Kunstler 4923.

Perak: Larut, Kunstler 3212 and 6344; Maxwell's hill, Wray 2948; Gunong Arang Para, Scortechini 784; Gopeng, Kunstler 4715; Gunong Batu Puteh, Wray 9887 and 1033.

Dindings: Pangkor, Scortechini 1026; Bruas river, Scortechini 1456.

p. 118. **Morinda elliptica**, Ridl.

Syn. Morinda citrifolia var. elliptica, King.

Perak: Taiping, Scortechini 66; Simpang plains, Wray 2032.

Morinda rigida, Miq.

Perak: Larut, Kunstler 4004; Sungei Larut plains, Wray 2283.

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p. 119. **Morinda umbellata**, Linn.

Perak: Batang Padang District, Kunstler 7793; Gunong Batu Puteh, Wray 1115.

Dindings: Pangkore, Scortechini 1010.

Selangor: Ulu Bubong, Kunstler 10186.

Morinda lacunosa, King and Gamble.

Perak: Without locality and number, Scortechini.

Note.—Kew has a specimen of this collected by Kunstler at Gopeng.

p. 120. **Rennellia speciosa**, H.f. var. elongata King and Gamble.

Perak: Larut, Scortechini 106.

p. 123. **Perakanthus pauciflorum**, Robyns.

Syn. Canthium pauciflorum, King and Gamble.

Perak: Taiping, Scortechini 62.

Canthium horridum, Bl.

Syn. Canthium parvifolium, King (non Roxb.)

Perak: Larut, Scortechini 95; Taiping, Scortechini 441; Gopeng, Kunstler 408.

p. 126. **Canthium didymum**, Gaertn.

Perak: Larut, Kunstler 4163 and 7242; Tupai Larut plains, Wray 2679; Gopeng, Scortechini 176 and 2051; Ulu Slim, Kunstler 10661.

Selangor: Ulu Kerling, Kunstler 8580; Ulu Bubong, Kunstler 10857; P.P. (Pahang Path) at 1,500–2,000 ft., in dense rocky jungles, Kunstler 10966.

p. 129. **Psychotria obovata**, Wall.

Syn. Psychotria polycarpa, H.f.

Perak: Taiping plains, Wray 2394; Assam Kumbang plains, Wray 1933, 3074; Larut, Kunstler 3174 and 6483; Gunong Batu Puteh, 3,400 ft., Wray, 1164.

Selangor: Near Ulu Bera, Kunstler 10825.

p. 130. **Psychotria Scortechinii**, King and Gamble.

Perak: Larut, Kunstler 2566; Maxwell's hill, at 3,000 ft., Scortechini 311; Caulfield's hill, at 4,000 ft., Scortechini 404, 426; Gopeng, Kunstler 897.

Psychotria pilulifera, King and Gamble.

Perak: Gunong Bubu, 5,000 ft., Wray 3870; Gunong Batu Puteh, 3,400–4,500 ft., Wray 287, 398, 434, 946.

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p. 131. **Psychotria morindæflora**, Wall.

Perak: Blanda Mabok plains, Wray 4001; Larut, Kunstler 2585 and 2665; Kuala Dipang, Scortechini 1826.

Psychotria sarmentosa, Bl.

Penang: Kunstler 1346; Pulau Jerajak, Kunstler 4967.

Perak: Larut, Kunstler 7572; Gunong Arang Para, Scortechini 562.

p. 132. **Psychotria Kunstleri**, King and Gamble.

Perak: Larut, Kunstler 1886, 4953, 6588; Relau Tujor, Wray 2230.

Psychotria penangensis, H.f.

Perak: Gopeng, Kunstler 4591, Scortechini 2034; Sungei Larut, Kunstler 3049 and 10723; Ulu Slim, Kunstler.

p. 133. **Psychotria laxiflora**, Bl.

Perak: Larut, Kunstler 4117; Taiping, Kunstler 8428.

Psychotria calocarpa, Kurz.

Perak: Larut, Kunstler 1930, 2348 and 6798; Relau Tujor, Wray 2200.

Selangor: Ulu Kerling, Kunstler 10772.

p. 134. **Psychotria rostrata**, Bl.

Syn. Chasalia rostrata, Miq.

Perak: Larut, Scortechini 1482.

Psychotria Helferiana, H.f.

Perak: Gopeng, Kunstler 4345 and 4661.

Psychotria Helferiana, var. diffusa, King and Gamble.

Perak: Maxwell's hill, Scortechini 400.

p. 135. **Psychotria rhinocerotis**, Reinw.

Perak: Kuala Dipang, Kunstler 8272.

Psychotria multicapitata, King and Gamble.

Perak: Taiping, Scortechini 214; Larut, Kunstler 5402, 7513; Gunong Bubu, Kunstler 7380; Kampar river, Kunstler 867; Gopeng, Kunstler 436.

Selangor: Ulu Bubong, Kunstler 10559.

Psychotria Birchiana, King and Gamble.

Perak: Larut, Kunstler 2134 and 2950; Maxwell's hill, Scortechini 258.

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Psychotria fulvoidea, King and Gamble.

No specimen in Sibpur.

p. 136. **Psychotria angulata**, Korth.

Perak: Larut, Kunstler 4170.

p. 137. **Psychotria Montana**, Bl.

Perak: Larut, Scortechini 1513, Kunstler 1954, 2190; Maxwell's hill, Scortechini 277; Sungei Larut, Wray 2289; Gopeng, Kunstler 452, 4707 and 6111; Kuala Dipang, Scortechini unnumbered; Gunong Batu Puteh, 4,500 ft., Wray 276, 1628.

p. 139. **Psychotria malayana**, Jack.

Perak: Taiping, Scortechini 507; Maxwell's hill, Wray 2956; Larut, Kunstler 6327; Gunong Bujong Malaka, 3,000–3,500 ft., Kunstler 7168; (King has quoted this again under P. viridiflora).

Psychotria viridiflora, Reinw.

Perak: Larut, Kunstler 2655; Simpang, plains, Wray 2027, Trong, plains, Gopeng, Kunstler 4275, 4374 and 5964; Gunong Bujong Malaka, Kunstler 7224; Gunong Batu Puteh, Wray 290, 2778.

p. 140. **Psychotria stipulacea**, Wall.

Penang: Kunstler 1357.

Perak: Maxwell's hill, Scortechini 278; Trong, Kunstler 1382; Gunong Arang Para, Scortechini 538, 558.

p. 141. **Psychotria Wrayi**, King and Gamble.

Perak: Blanda Mabok plains, Wray 2959, Larut, Kunstler 2755.

Psychotria inæqualis, King and Gamble.

Perak: Maxwell's hill, Scortechini 279.

p. 144. **Cephælis Griffithii**, H.f.

Perak: Larut, Kunstler 2365, 2534, 6251 and 6399; Maxwell's hill, Scortechini 343; Sungei Raya, Kunstler 746; Tapah, Wray 1338; Gunong Batu Puteh, Wray 1497.

p. 145. **Cephælis angustifolia**, Ridl.

Syn. Cephælis cuneata, H.f. in part.

Perak: Waterfall hill, Taiping, Wray 1977; Larut, Kunstler 6218; Ulu Batang Padang, Wray 1497; near Pangkalan Bahru, Kunstler 1104.

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p. 146. **Geophila humifusa**, King and Gamble.

Perak: Maxwell's hill, Scortechini 412.

p. 147. **Geophila reniformis**, Don.

Perak: Kurau, Scortechini 2183; Larut, Scortechini 130; Gunong Mesah; Kunstler 905.

p. 148. **Geophila Scortechinii**, King.

Perak: Unlocalized, Scortechini.

p. 149. **Streblosa hirta**, Ridl.

This is not represented in Calcutta Herbarium.

p. 152. **Lasianthus Griffithii, wt. var. latibracteata**, King and Gamble.

Perak: Gunong Arang Para, Scortechini 619.

Lasianthus stipularis, Bl.

Perak: Taiping, Scortechini 213; Maxwell's hill, Scortechini 260.

Singapore: Bukit Tumah, Kunstler 340.

p. 153. **Lasianthus cyanocarpus**, Jack.

Perak: Larut, Kunstler 6395; Gunong Batu Puteh, Wray 991.

Rhio: Bukit Bingarang, Kunstler 305.

p. 154. **Lasianthus rhinocerotis**, Bl.

Perak: Larut, Kunstler 3809; Gunong Batu Puteh, Wray 237; Gunong Arang Para, Scortechini 537.

Lasianthus bractescens, Ridl.

Syn. Lasianthus cyanocarpus var. subsessilis, King.

Perak: Gopeng, Kunstler 472; Gunong Ijuk, Scortechini 1207. (King quotes these numbers under L. subinæqualis, King and Gamble.)

p. 155. **Lasianthus subinæqualis**, Bl.

Perak: Larut, Kunstler 3358; unlocalized, Scortechini 189 and 193.

p. 156. **Lasianthus attenuatus**, Jack.

Rhio: Gunong Bintang, Kunstler 239.

Lasianthus appressus, H.f.

Penang: Waterfall hill, King.

p. 157. **Lasianthus coronatus**, King and Gamble.

Perak: Maxwell's hill, Scortechini 329.

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Lasianthus pilosus, Wight.

Perak: Gunong Batu Puteh, Wray 876.

Lasianthus pilosus, var. angustifolia, King and Gamble.

Perak: Gunong Arang Para, Scortechini 574.

Lasianthus Maingayi, H.f.

Syn. Lasianthus flavicans, King and Gamble.

Selangor: P.P. (Pahang Path), Kunstler 10974.

p. 158. **Lasianthus perakensis**, King and Gamble.

Perak: Larut, Kunstler 2438 and 2838.

Selangor: Ulu Bubong, Kunstler 10210.

p. 162. **Lasianthus Harveyanus**, King and Gamble.

There is confusion worse confused here, for King has evidently interchanged the specimens and described them as per the interchange. According to his description, Wray's No. 444 from Gunong Batu Puteh at a height of 3,400 ft. is the variety longifolia with 8–10 nerves, but he has quoted this under the type. Whereas Harvey's specimen is the type and he has cited it under the variety which it cannot be from the nature of the venation. But the specimens are correctly named in the herbarium by King himself and the interchange may after all be accidental.

p. 163. **Lasianthus nervosus**, King and Gamble.

Perak: Maxwell's hill, Scortechini 3 and 2; Gunong Batu Puteh, Wray 335.

Lasianthus constrictus, Wight.

Perak: Larut, Kunstler 2564, 2780; unlocalized, Scortechini.

p. 164. **Lasianthus chinensis**, Benth.

Perak: Larut, Kunstler 2582.

Selangor: Ulu Bubong, Kunstler 10100.

p. 166. **Lasianthus oblongus**, King and Gamble.

Perak: Maxwell's hill, Scortechini 265; Waterfall, Taiping, Wray 2080; Larut, Kunstler 4128; Gopeng, Kunstler 402, 4462.

Selangor: Ulu Bubong, Kunstler 10082.

p. 167. **Lasianthus Lowianus**, King and Gamble.

Syn. Lasianthus lucidus, King and Gamble.

Perak: Larut, Kunstler 2797, 2840 and 5051; Maxwell's hill, Scortechini 463; Gunong Bubu, Wray 3931; Gunong Batu Puteh, Wray 426 and 973.

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Lasianthus scalariformis, King and Gamble.

Perak: Maxwell's hill, Scortechini 411; Gunong Batu Puteh, 6,700 ft., Wray 332.

p. 168. **Lasianthus pseudo-lucidus**, King.

Perak: Gunong Inas, 5,000 ft., Wray 4109.

Lasianthus subspicatus, King and Gamble.

Perak: Kuala wok, Wray 863.

p. 169. **Lasianthus filiformis**, King and Gamble.

Perak: Taiping, Scortechini 180, 190; Gunong Chabang, Scortechini 29.

Lasianthus gracilis, King and Gamble.

Perak: Gunong Chabang, Scortechini 39; Gunong Arang Para, Scortechini 617.

p. 170. **Saprosma glomerulatum**, King and Gamble.

Perak: Limestone hills of Gopeng, Kunstler 6031 and 8166; Gunong Mesah, Kunstler 783.

Saprosma Scortechinii, King and Gamble.

Perak: Larut, Kunstler 4138 and 5020; Gunong Arang Para, Scortechini 511, 670.

Saprosma ternatum, H.f.

Perak: Gunong Ijuk, Scortechini 1163; Blanda mabok, Wray 3943; Larut, Kunstler 1975, 2764, 3052, 4006, 4069 and 6760; Taiping, Kunstler 8491; Waterfall, Taiping, Wray 2262.

p. 172. **Hydnophytum formicarium**, Jack.

Dindings: Pangkor, Scortechini 954.

p. 173. **Pæderia fœtida**, L.

Perak: Maxwell's hill, Scortechini 263; Larut, Kunstler 7560.

Penang: Kunstler 4916.

p. 174. **Pæderia verticellata**, Bl.

Perak: Larut, Scortechini 1573; Kunstler 3125, 3736, 3780, 5316 and 5410; Taiping, Scortechini 446; Gopeng, Kunstler 4451 and 4780.

Selangor: Ulu Bubong, Kunstler 10613.

Pæderia tomentosa, Bl.

Perak: Krian, Scortechini 1376; Gopeng, Kunstler 6048.

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Diodia sarmentosa, Sw.

Syn. Spermacoce scaberrima, Bl.

Perak: Larut, Scortechini 78; Taiping, Scortechini 12; Gunong Arang Para, Scortechini 602.

p. 175. **Borreria hispida**, Schum.

Syn. Spermacoce hispida, Linn.

Perak: Bruas river, Scortechini 64.

Dindings: Pangkor, Scortechini 1003.

p. 180. **Sphæranthus africanus**, Linn.

Perak: Kurau, Scortechini 1640.

p. 187. **Vernonia javanica**, DC.

Syn. Vernonia arborea, Buch-Ham.

Perak: Tupai plain, Wray 2442; Relau Tujor, Wray 2240; Larut, Kunstler 7755; Gopeng, Kunstler 4404 and 4636; Batang Padang District, Kunstler 2891; Durian Sabatang, Kunstler 394.

Selangor: Ulu Bubong, Kunstler 10627.

Singapore: Kunstler 1194.

p. 192. **Blumea chinensis**, DC.

Perak: Larut, Scortechini 1491.

p. 202. **Pentaphragma begoniæfolium**, Wall.

Upper Perak: Wray 3668.

Penang: Kunstler 1598.

p. 203. **Pentaphragma Scortechinii**, King and Gamble.

Perak: Larut, Kunstler 2653; Maxwell's hill, Scortechini 336; Gopeng, Kunstler 958; Gunong Batu Puteh, Wray 352 and 389.

p. 205. **Agapetes perakensis**, Ridl.

Syn. Agapetes Griffithii, King.

Perak: Larut, Kunstler 3831 and 6363; Gunong Batu Puteh, Kunstler 8051, Wray 1671.

Pentapterygium Scortechinii, King and Gamble.

Perak: Maxwell's hill, Scortechini 309; Gunong Batu Puteh, Kunstler 8152, Wray 210.

p. 207. **Vaccinium Scortechinii**, King and Gamble.

Perak: Gunong Batu Puteh, Kunstler 8028, Wray 336 (6,700 ft.) and 388 (6,000 ft.).

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Vaccinium viscifolium, King and Gamble.

Perak: Caulfield's hill, Scortechini 404 and 405; Gunong Batu Puteh, Kunstler 8020, Wray 328.

Vaccinium perakense, Ridl.

Syn. P. Tejsmannii, King.

Perak: Gunong Arang Para, Scortechini; Maxwell's hill, Scortechini 428; Gunong Bubu, Wray 3909; Gunong Batu Puteh, Wray 1117.

p. 208. **Vaccinium glabrescens**, King and Gamble.

Perak: Unnumbered and unlocalized, Scortechini.

p. 209. **Vaccinium bancanum**, Miq.

Syn. Vaccinium Kunstleri, King and Gamble.

Perak: Larut, Kunstler 7018; Taiping, Kunstler 8415; Maxwell's hill, Scortechini 39 and 428.

p. 210. **Vaccinium acuminatissimum**, Miq.

Perak: Taiping, Scortechini 472; Larut, Kunstler 3509 and 6734; Gunong Batu Puteh, Wray 1159; Tapah, Wray 1418; Batang Padang District, Kunstler 7810.

p. 211. **Vaccinium erythrinum**, Hook.

Syn. Diploclisia erythrina, King and Gamble.

Perak: Larut, Kunstler 7349.

p. 212. **Gaultheria fragrantissima**, Wall.

Perak: Caulfield's hill at 5,500 ft., Scortechini 405 in part; Gunong Batu Puteh, Wray 879.

Pahang: Gunong Berumbun, Wray 1580.

Gaultheria leucocarpa, Bl.

Perak: Gunong Inas, Wray 4101; Gunong Chabang, Scortechini 1348; Gunong Batu Puteh, Kunstler 8025, Wray 360.

Pahang: Gunong Berumbun, Wray 1573.

p. 213. **Diplycosia elliptica**, Ridl.

Syn. Diplycosia microphylla, Bees.

Vaccinium macrophyllum, King.

Perak: Larut, Kunstler 639 and 3660; Gunong Ijuk, Scortechini 1171; Gunong Batu Puteh, Wray 470 and 1105.

p. 214. **Diplycosia heterophylla**, Bl.

Scortechini is unrepresented in Sibpur.

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Diplycosia latifolia, Bl.

Perak: Larut, Kunstler 6797; Maxwell's hill, Scortechini 339; Gunong Batu Puteh, Kunstler 8023, Wray 364 and 909.

p. 215. **Pieris ovalifolia**, Don.

Perak: Ulu Batang Padang, Wray 1522.

p. 216. **Rhododendron javanicum**, Benn.

Perak: Larut, Kunstler 2335, 3672, 6916 and 7008; Gunong Ijuk, Scortechini 1325; Maxwell's hill, Scortechini 373; Gunong Batu Puteh, Wray 1023.

Rhododendron Teysmanii, Miq.

Syn. Rhododendron javanicum var. Teysmanii, King and Gamble.

Perak: Larut, Kunstler 3672.

Rhododendron perakense, King and Gamble.

Pahang: Gunong Berumbun, 7,000 ft., Wray 1574.

p. 217. **Rhododendron Wrayi**, King and Gamble.

Perak: Maxwell's hill, Scortechini 367; Gunong Batu Puteh, Wray 322, 836.

Pahang: Gunong Berumbun, Wray 1569.

p. 218. **Rhododendron jasminiflorum**, Hook.

Perak: Larut, Kunstler 3586, 3645 and 6909; Maxwell's hill, Scortechini 308; Gunong Batu Puteh, 6,000 ft., Wray 1635.

p. 219. **Rhododendron longiflorum**, Lindl.

Perak: Larut, Kunstler 1864 and 5181; Gunong Arang Para, Scortechini 553; Maxwell's hill, Scortechini 1409.

Rhododendron malayanum, Jack.

Perak: Larut, Kunstler 2336 and 3227; Caulfeild's hill, Scortechini 385.

Rhododendron Scortechinii, King and Gamble.

Perak: Caulfeild's hill, Scortechini 401[a]; Gunong Bubu, Wray 3840; Gunong Batu Puteh, Wray 311; Gunong Arang Para, Scortechini 753.

Pahang: Gunong Berumbun, Wray 1572.

Rhododendron pauciflorum, King and Gamble.

Perak: Gunong Batu Puteh, Wray 231, ? Tambong Batak (? Gunong Tumang Batak), Scortechini 345. Scortechini says he collected this on Gunong Batu Puteh also.

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p. 221. **Rhododendron dubium,** King and Gamble.

Perak: Maxwell's hill, Scortechini 369; Gunong Batu Puteh, 3,400–4,500 ft., Wray 233 and 460.

Pernettyopsis malayana, King and Gamble.

Perak: Gunong Batu Puteh, Scortechini 402, Wray 312. Scortechini says in his notes that he has also collected this from Gunong Bubu.

Pernettyopsis sub-glabra, King and Gamble.

Perak: Gunong Arang Para, Scortechini 752; Gunong Bubu, Kunstler 7407.

p. 222. **Cheilotheca malayana,** Scort.

Perak: Larut, Kunstler 2715; unlocalized, Scortechini, without number.

p. 223. **Leucopogon malayanus,** Jack.

Perak: Gunong Bubu, Scortechini 760; Kunstler 7428; Gunong Batu Puteh, Wray 208 and Kunstler 8056.

p. 227. **Mæsa macrothyrsa,** Miq.

Perak: Larut, Kunstler 2502, 2722, 3777, 5326; Larut, Scortechini 122[a] and 1655; Gopeng, Kunstler 725; Ulu Tupai, Wray 2684.

Mæsa ramentacea, Wall.

Perak: Gunong Arang Para, Scortechini 628.

p. 228. **Mæsa striata,** Mez.

Perak: Larut, Kunstler 2287.

p. 229. **Mæsa indica,** Wall.

Perak: Kampong Berkola, Wray 3314; Maxwell's hill, Scortechini 368; Gunong Arang Para, Scortechini 733.

p. 230. **Myrsine Porteriana,** Wall.

Perak: Larut, Kunstler 5001, Wray 678; Ulu Batang Padang, Wray 1537.

Myrsine perakensis, King and Gamble.

Perak: Gunong Bubu, Wray 3856.

p. 231. **Embelia garciniæfolia,** Wall.

Syn. Embelia ribes, King and others.

Perak: Gunong Batu Puteh, Wray 420.

p. 232. **Embelia dasythyrsa,** Miq.

Perak: Larut, Kunstler 4103, 5102 and 6640; Taiping, Scortechini 498; Gopeng, Kunstler 776 and 5762; Assam Kumbang, Wray 1924.

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Selangor: Ulu Kerling, Kunstler 8583; Ulu Bubong, Kunstler 10024 and 10701.

p. 233. **Embelia Scortechinii,** King and Gamble.

Perak: Unlocalized, Scortechini.

Embelia penangiana, Mez.

Perak: Larut, Kunstler 3637; Tapah, Wray 1375 and 1409.

Selangor: Ulu Kal, Kunstler 10739.

Embelia rugosa, Ridl.

Syn. Embelia ribes var. rugosa, King and Gamble.

Perak: Assam Kumbang, Wray 2576; Larut, Kunstler 2512, 3001, and 4040; Sungei Larut, Wray 2278.

Embelia coriacea, Wall.

Syn. Embelia pergamacea, DC.

Perak: Larut, Scortechini 119, Kunstler 3658, 4976, 5056, 5254, 5323, 6231, 6412; Assam Kumbang, Wray 2579; Ayer Larut, Wray 2001; Gopeng, Kunstler 4678; Batang Padang District, Kunstler 7857.

Selangor: Ulu Bubong, Kunstler 10015, 10543.

p. 234. **Embelia Lampani,** Scheff.

Perak: Larut, Kunstler 2483, 4210; Gopeng, Kunstler 8134; Assam Kumbang, Wray 2784.

Embelia amentacea, Cl.

Perak: Larut, Kunstler 5055, 6280, 6817; Gunong Arang Para, Scortechini 802.

p. 235. **Embelia myrtillus,** Kurz.

Perak: Gunong Bubu, Scortechini 762; Wray 3818.

Pahang: Gunong Berumbun, Wray 1565.

p. 236. **Embelia parviflora,** *Wall.*

Perak: Maxwell's hill, Wray 4194; Larut, Kunstler 2342 and 6992.

p. 237. **Labisia paucifolia,** King and Gamble.

Perak: Gunong Inas, Wray 4102; Gunong Batu Puteh, Kunstler 8078; unlocalized, Scortechini.

Labisia longistyla, King and Gamble.

Pahang: Gunong Berumbun, Wray 1590.

p. 240. **Ardisia pachysandra,** Mez.

Syn. Pimelandra Wallichii, DC.

Perak: Gopeng, 5995.

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p. 241. **Ardisia littoralis**, Andr.

Perak: Taiping, Wray 1866, 2373; unlocalized, Scortechini.

Dindings: Pangkor, Scortechini 1053.

p. 242. **Ardisia solanacea**, Roxb.

Perak: Relau Tujor, Wray 1960; Gunong Arang Para, Scortechini 679; Gopeng, Kunstler 6011.

Ardisia oxyphylla, Wall.

Perak: Gopeng, Kunstler 6185 and 8218.

p. 243. **Ardisia Scortechinii**, King and Gamble.

Perak: Gopeng, Kunstler 4662 and 4672; unlocalized, Scortechini.

Ardisia oblongifolia, King and Gamble.

Perak: Gunong Bubu, 1,000 ft., Wray 3797.

p. 244. **Ardisia biflora**, King and Gamble.

Perak: Kampong Kota, Wray 3343; Gopeng, Kunstler, 4216 and 4711.

p. 245. **Ardisia andamanica**, Kurz.

Perak: Larut, Kunstler 5692; Gunong Batu Puteh, Wray 971 and 1033, Kunstler 8664.

p. 246. **Ardisia labisiæfolia**, King and Gamble.

Perak: Gunong Batu Puteh, Wray 320; unlocalized, Scortechini.

Ardisia montana, King and Gamble.

Perak: Maxwell's hill, Scortechini 296[a]; Gunong Batu Puteh, Wray 327, Kunstler 8029; Gunong Bubu, Wray 3869.

Ardisia sinuata, King and Gamble.

Perak: Gopeng, Kunstler 4599; Simpang, Wray 3023; Kota near Taiping, Wray 2408.

Ardisia colorata, Roxb.

Perak: Selama, Kunstler 3099; Larut, Scortechini 1505; Taiping, Scortechini 510[a]; Larut, Kunstler 3284, 6624 and 6823; Gopeng, Kunstler 798.

Ardisia colorata, var. salicifolia, King and Gamble.

Perak: Larut, Kunstler 3216 and 6816.

Ardisia colorata, var. complanata, Cl.

Perak: Selama, Scortechini 1124; Larut, Scortechini 144[b]; Gunong Bubu, Wray 3929.

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Ardisia colorata, var. polyneura, Cl.

Perak: Ulu Selama, Scortechini 1290; Kota near Taiping, Wray 1950; Larut, Kunstler 2629, 3643 and 4119; Gopeng, Kunstler 527; Gunong Batu Puteh, Wray 1643.

Ardisia platyclada, King and Gamble.

Perak: Larut, Kunstler 5863; Maxwell's hill, Scortechini 232[a]; Gopeng, Kunstler 824 and 8136.

Ardisia divergens, Roxb.

Perak: Taiping, Scortechini 543.

p. 248. **Ardisia porosa,** Cl.

Perak: Selama, Kunstler 3108; Larut, Kunstler 1872, Scortechini 116[a] and 1511; Batu Togoh, Wray 2160.

p. 249. **Ardisia crassa,** Cl.

Perak: Larut, Scortechini 1568.

Ardisia lanceolata, Roxb.

Perak: Larut, Kunstler 6586; Sungei Larut, Wray 2480; Kota near Taiping, Larut, Wray 2863; Gopeng, Kunstler 4785; Dipang, Scortechini 1824; Tapah, Wray 192 and 1401.

Selangor: Ulu Kerling, Kunstler 8730; Ulu Bubong, Kunstler 10049.

p. 250. **Ardisia solanoides,** King and Gamble.

Perak: Gopeng, Kunstler 4254.

p. 251. **Ardisia villosa,** Roxb.

Perak: Selama, Kunstler 3138; Larut, Kunstler 6448; Gopeng, Kunstler 6104; Blanja, Wray 151; Gunong Arang Para, Scortechini 638; Batang Padang District, Kunstler 7915.

Selangor: Ulu Kerling, Kunstler 8781; Ulu Bubong, Kunstler 10052.

Ardisia villosa, var. glabrata, Kurz.

Perak: Larut, Kunstler 6255 and 7696; Gopeng 4612, Wray 3414.

p. 252. **Ardisia Wrayi,** King and Gamble.

Perak: Larut, Kunstler 1888, 3631 and 6938; Maxwell's hill, Scortechini 418; Relau Tujor, Wray 4051; Gunong Batu Puteh, Wray 232 and 438.

Ardisia minor, King and Gamble.

Perak: Unlocalized, Scortechini.

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Ardisia perakensis, King and Gamble.

Perak: Unlocalized, Wray 3462.

p. 253. **Ardisia Meziana**, King and Gamble.

Perak: Gopeng, Kunstler 5838.

Ardisia Ridleyi, King and Gamble.

Perak: Larut, Kunstler 5019.

Ardisia rosea, King and Gamble.

Perak: Larut, Kunstler 3247, 6247; Gunong Arang Para, Scortechini 644; Gunong Chabang, Scortechini 295[b]; Gunong Batu Puteh, Kunstler 8057, Wray 209, 326 and 402.

p. 254. **Ardisia Maingayi**, King and Gamble.

Perak: Maxwell's hill, Scortechini 335; Gunong Batu Puteh, Wray 304, 953; Ulu Batang Padang, Wray 1597.

Ardisia theæfolia, King and Gamble.

Perak: Gunong Chabang, Scortechini.

p. 255. **Ardisia bambusetorum**, King and Gamble.

Selangor: Ulu Bubong, Kunstler 10095.

Ardisia odontophylla, Wall.

Perak: Larut, Kunstler 2583, 3053 and 7367.

p. 256. **Ægiceras majus**, Gærtn.

Penang: Pulau Jerajak, Kunstler 4961.

p. 258. **Sideroxylon malaccense**, Cl.

Perak: Larut, Kunstler 3373, 6550; Taiping, Wray 136; Wray 3404.

p. 259. **Sideroxylon ferrugineum**, H.f.

Dindings: Pangkor, Scortechini 1463.

Singapore: Kunstler 1234.

p. 260. **Sarcosperma paniculatum**, Stapf and King.

Perak: Batang Padang District, Kunstler 7970; Ulu Slim, Kunstler 10672 and 10762.

Selangor: Ulu Bubong, Kunstler 10554 and 10875.

p. 261. **Isonandra perakensis**, King and Gamble.

Perak: Gunong Bujong Malaka, Kunstler 7138.

Isonandra rufa, King and Gamble.

Perak: Gopeng, Kunstler 4550, Scortechini 159.

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p. 262. **Payena Maingayi,** Cl.

Perak: Taiping, Scortechini 546[a]; Batang Padang District, Kunstler 7918; Gunong Bujong Malaka, Kunstler 7223; unlocalized, Wray 3423.

Payena longipedicellata, Brace.

Perak: Larut, Kunstler 2940.

p. 263. **Payena Leerii,** Kurz.

Perak: Larut, Kunstler 2937; Durian Sabatang, Wray 523; Ulu Batang Padang, 4,900 ft., Wray 1539.

Payena lucida, DC.

Perak: Larut, Kunstler 3364, 3734, 6636; Trong plains, Wray 3191; Waterfall, Taiping, Wray 2266; Gopeng, Scortechini 1989; Gunong Batu Puteh, Wray 1170; Batang Padang District, Kunstler 7842 and 7957.

Selangor: Ulu Kerling, Kunstler 8705; Ulu Bubong, Kunstler 10466; Ulu Kal, Kunstler 10496; P.P. (Pahang Path), 1,500–2,000 ft., Kunstler 10978.

p. 264. **Payena obtusifolia,** King and Gamble.

Perak: Maxwell's hill, Scortechini 340[b].

Payena dasyphylla, Pierre.

Perak: Gunong Ijuk, Scortechini 1242; Larut, Kunstler 2611.

Payena dasyphylla, var. glabrata, King and Gamble.

Perak: Taiping, Scortechini 536[b].

p. 267. **Bassia Kingiana,** Brace. (*Madhuca Kingiana* H.J. Lam.)

Perak: Larut, Kunstler 3678; Gunong Bubu, Kunstler 7389.

Bassia Kunstleri, Brace. (*Madhuca Kunstleri*).

Perak: Larut, Kunstler 3241, 3547, 3964, 6410; Waterfall hill, Taiping, Wray 2643 (Non-Kunstler).

p. 268. **Bassia malaccensis,** King and Gamble. (*Madhuca malaccensis*, H.J. Lam.)

Perak: Maxwell's hill, Scortechini 314; Gunong Batu Puteh, Wray 1229.

Bassia Curtisii, King and Gamble. (*Madhuca Curtisii*, H.J. Lam.)

Perak: Larut, Scortechini 1408.

N.B.—King quotes Wray's 512 from Taiping waterfall under this which is a mistake. 512 has been correctly named and placed under B. perakensis by Gamble in the Herbarium.

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p. 269. **Bassia laurifolia,** King and Gamble.

Perak: Selama, Kunstler 3104; Larut, Kunstler 3718.

Bassia perakensis, King and Gamble. (Lam. reduces it to G. Curtisii.)

Perak: Larut, Kunstler 3846; Waterfall, Taiping, Wray 512.

p. 270. **Bassia Braceana,** King and Gamble.

Perak: Larut, Scortechini 1483; Taiping plains, Wray 2694; Relau Tujor, Wray 1775, 2613.

Bassia Braceana, var. lanceolata, King and Gamble.

Perak: Tapah, Wray 189.

Bassia cuprea, King and Gamble.

Perak: Gunong Bujong Malaka, Scortechini 1879.

p. 271. **Bassia Motleyana,** Cl. var. Scortechini, King and Gamble. (Ganua Motleyana, Pierre G. Scortechinii, H.f. Lam.)

Perak: Larut, Kunstler 5454 and 6735.

p. 273. **Palaquium Maingayi,** King and Gamble.

Perak: Larut, Kunstler 6644; Waterfall, Taiping, Wray 2215; Ayer Kenering, Wray 524.

p. 274. **Palaquium Clarkeanum,** King and Gamble.

Perak: Larut, Kunstler 3796.

Palaquium Gutta, Burck.

Perak: Larut, Kunstler 6475.

p. 275. **Palaquium bancanum,** Burck. (Lam. makes it P. rostratum, Burck.)

Perak: Blanda Mabok, Wray 3984.

Palaquium Oxleyanum, Pierre, var. glabrata.

Perak: Waterfall Taiping, Wray 518.

p. 276. **Palaquium Herveyi,** King and Gamble.

Perak: Gunong Bujong Malaka, Scortechini 1892; Gunong Batu Puteh, Wray 1104 and 1153.

p. 277. **Palaquium stellatum,** King and Gamble.

Syn: Bassia Watsoni.

Perak: Gunong Bujong Malaka, Scortechini 1855.

p. 278. **Mimusops elengi,** Linn.

Perak: Selama, Scortechini 1122.

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Mimusops Kauki, Linn. (Manilkara Kauki, Dubarrd.)

Perak: Unlocalized, Scortechini.

p. 279. **Maba venosa,** King and Gamble.

Perak: Larut, Kunstler 3495 and 3862; Gunong Bubu, Kunstler 7643.

p. 280. **Maba Clarkeana,** King and Gamble.

Perak: Gopeng, Kunstler 4816.

Maba perakensis, King and Gamble.

Perak: Larut, Kunstler 3945 and 5519; unlocalized, Wray 3130.

p. 283. **Diospyros Wrayi,** King and Gamble.

Perak: Blanda Mabok, Wray 3955; Larut, Kunstler 2076, 2993; Trong, plains, Wray 2764.

Diospyros microphylla, Bedd.

Perak: Gopeng, Scortechini 2057.

Diospyros subrhomboidea, King and Gamble.

Perak: Larut, Kunstler 2400; Waterfall, Taiping, Wray 4052.

p. 284. **Diospyros Scortechinii,** King and Gamble.

Perak: Larut, Kunstler 2407; Maxwell's hill, Scortechini 377 and Caulfeild's hill, Wray 638.

Diospyros glomerulata, King and Gamble.

Selangor: Ulu Kerling, Kunstler 8590, 8764.

Diospyros graciliflora, Hiern.

Syn. Diospyros decipiens, Cl.

Perak: Larut, Scortechini 181; Maxwell's hill, Wray 3214; Tupai plains, Wray 2843; Batang Padang District, Kunstler 7990.

p. 285. **Diospyros dumosa,** King and Gamble.

Not Represented. ('Singapore and Kew equally possess Upper Perak, at 300 ft., Wray 3508.')

Diospyros flavicans, Hiern.

Perak: Larut, Kunstler 2480, 3072, 3380, 3354, 3774 and 6632; Taiping, Wray 2058; Larut, Scortechini 74[a] and 230[a]; Gopeng, Kunstler 6149.

Selangor: Ulu Bubong, Kunstler 10007.

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p. 286. **Diospyros lucida,** Wall.

Penang: Kunstler 1760.
Perak: Durian Sabatang, Kunstler 1050; Wray 3018 and 3056.

p. 288. **Diospyros bilocularis,** Oliv.

Perak: Gunong Bubu, Kunstler 7383.

p. 289. **Diospyros argentea,** Griff.

Perak: Larut, Kunstler 6387 and 6896; Taiping, Scortechini 498; Tapah, Wray 172 and 1392; Batang Padang District, Kunstler 8003.

Diospyros tristis, King and Gamble.

Perak: Relau Tujor, Wray 2190.

p. 290. **Diospyros rufa,** King and Gamble.

Perak: Larut, Kunstler 4945, 5409, 6712.

Diospyros pauciflora, King and Gamble.

Perak: Gunong Bubu, Kunstler 7363 and 7749.

Diospyros toposioides, King and Gamble.

Perak: Larut, Kunstler 4106 and 4889; Gunong Bubu, Kunstler 8357.

Diospyros ellipsoidea, King and Gamble.

Perak: Near Gunong Pondok, Kunstler 7269 and 7689.

p. 291. **Diospyros Wallichii,** King and Gamble.

Perak: Gunong Pondok, Kunstler 7619; Gopeng, Scortechini 1976.

Diospyros rigida, Hiern.

Perak: Chanderiang, Kunstler 5732; Gopeng, Kunstler 5971.

Diospyros oblonga, Wall.

Perak: Kuala Dipang, Kunstler 8278.

p. 292. **Diospyros oleifolia,** Wall.

Perak: Larut, Kunstler 3876.

p. 293. **Diospyros Horsfieldii,** Hiern.

Perak: Kuala Dipang, Scortechini 1765; Kunstler 8261.

p. 294. **Diospyros latisepala,** Ridl.

Syn. Diospyros paniculata, King.
Perak: Gopeng, Kunstler 8163.

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Diospyros nutans, King and Gamble.

Perak: Larut, Kunstler 2981, 3513, Scortechini 1678; Gunong Arang Para, Scortechini 694; near the bank of Kinta river, Kunstler 378.

p. 296. **Styrax serrulatum,** Roxb.

Penang: Kunstler 1662.

p. 297. **Styrax benzoin,** Dryand.

Perak: Gunong Arang Para, Scortechini 1998.

Selangor: Ulu Bubong, Kunstler 10203 and 10305; Ulu Kerling, Kunstler 8615.

p. 298. **Styrax crotonoides,** Cl.

Perak: Unlocalized, Scortechini 179[b].

Selangor: Ulu Kerling, Kunstler 8558.

p. 300. **Symplocos fulvosa,** King and Gamble.

Perak: Gunong Arang Para, Scortechini 563 and 567.

p. 301. **Symplocos monticola,** King and Gamble.

Perak: Larut, Scortechini 533; Top of Gunong Hijau, Kunstler 3807 and 6927.

Symplocos fasciculata, Zoll.

Perak: Larut, Kunstler 2021, 5175, 5335, Scortechini 1527; Sungkai, Perak, Kunstler 3003; Kota, Wray 2418; Sungkai, Larut, Kunstler 2466; Larut, Scortechini 128[a]; Sungei Raya, Kunstler 1042.

Selangor: Ulu Bubong, Kunstler 10525.

Symplocos spicata, Roxb.

Kedah: Kunstler 1764.

Perak: Larut, Kunstler 6299 and 6903; Assam Kumbang, Wray 2798.

Symplocos spicata, Roxb. var. acuminata, Brand.

Perak: Sabatang, Scortechini 1556.

Sabatang is an abbreviation of Durian Sabatang (lit. the place of the one Durian tree). It is where Telok Anson has been built.

p. 302. **Symplocos ferruginea,** Roxb.

Penang: Kunstler 1359.

Perak: Larut, Scortechini 900; Kota Bahru, Kunstler 925.

Selangor: Ulu Kerling, Kunstler 8646.

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p. 303. **Symplocos adenophylla,** Wall.

Perak: Taiping hills, Scortechini 490; Larut, Kunstler 2686 and 6873; Gunong Inus, Wray 4123; Gunong Bubu, Wray 3928; Gunong Batu Puteh, Wray 1117.

Singapore: Kunstler 1269.

p. 304. **Symplocos perakensis,** King and Gamble.

Perak: Gunong Arang Para, Scortechini 646; Batang Padang District, Kunstler 7863.

Selangor: Ulu Bera, Kunstler 10801; Ulu Kal, 10501 and 10985.

Symplocos Brandiana, King and Gamble.

Perak: Larut, Kunstler 1887; Maxwell's hill, Scortechini 346 and 349.

p. 305. **Symplocos Curtisii,** Oliv.

Perak: Taiping, Kunstler 8431; Larut, Kunstler 2084; Gunong Arang Para, Scortechini 646 (in part); Maxwell's hill, Scortechini 328, 1423.

p. 306. **Symplocos cerasifolia,** Wall.

Perak: Larut, Kunstler 6283 and 6950; between Maxwell's hill and Simpang, Wray 3003; Larut hills, Scortechini 515; Gunong Batu Puteh, Wray 445.

Symplocos rigida, Cl.

Perak: Larut, Kunstler 7260; Maxwell's hill, Wray 3207; Gopeng, Scortechini 2646; Tapah, Wray 1294; Batang Padang District, Kunstler 2898.

Selangor: Ulu Kerling, Kunstler 8543; Ulu Bubong, Kunstler 10013.

Symplocos rubiginosa, Wall.

Perak: Near Gunong Bujong Malaka, Kinta, Kunstler 7112; Batang Padang District, Kunstler 8105; Kuala Dipang, Scortechini 1825.

p. 309. **Corydyloblaste Scortechinii,** Ridl.

Syn. Symplocos Scortechinii, King and Gamble.

Perak: Unlocalized, Scortechini.

p. 311. **Jasminum Maingayi,** Cl.

Perak: Taiping (Maxwell's hill), Scortechini 139 and 354.

p. 312. **Jasminum Wrayi,** King and Gamble.

Perak: Larut, Kunstler 1838, 2484, 5893; Waterfall Taiping, Wray 3147.

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p. 314. **Jasminum longipetalum,** King and Gamble.

Perak: Larut, Kunstler 2765 ; Gopeng, Kunstler 6005.

Jasminum insigne, Bl.

Perak: Larut, Kunstler 2890 and 3398 ; Taiping, Scortechini ; Gunong Bujong Malaka, Kinta, Kunstler 7059.

p. 315. **Jasminum Scortechinii,** King and Gamble.

Perak: Gunong Hijau, Kunstler 7006, 7009 ; Caulfeild's Hill, Scortechini 383 ; Taiping, Scortechini 479.

Osmanthus Scortechinii, King and Gamble.

Perak: Larut, Kunstler 5029 ; Gunong Hijau, Kunstler 6978 ; unlocalized, Wray 26, and Maxwell's hill, Scortechini 414.

Osmanthus Scortechinii, var. oblonga.

Perak: Larut, Kunstler 3663.

p. 316. **Linociera paludosa,** King and Gamble.

Perak: Larut, Kunstler 6476 ; Sungei Larut, Wray 2424.

p. 317. **Linociera caudifolia,** Ridl.

Syn. L. caudata, King and Gamble.

Perak: Larut hills, Kunstler 3212.

Linociera pauciflora, Cl.

Penang: Kunstler 1693.
Perak: Krian river, Scortechini.

p. 320. **Myxopyrum nervosum,** Bl.

Perak: Larut, Kunstler 3584 ; Gunong Arang Para, Scortechini 598 ; near Gunong Bubu, Kunstler 7392.

Selangor: Ulu Kerling, Kunstler 8845.

p. 323. **Willughbeia firma,** Bl.

Perak: Gunong Arang Para, Scortechini 651 ; Larut, Kunstler 6663.
Selangor: Ulu Bubong, Kunstler 10050 and 10854.

p. 325. **Willughbeia flavescens,** Dyer.

Perak: Batang Padang District, Kunstler 7848 ; Larut, Kunstler 7286.

Willughbeia flavescens var. rufescens, Ridl.

Perak: Unlocalized, Scortechini.

p. 326. **Chilocarpus costatus,** Miq.

Perak: Larut, Kunstler 3261 and 5264 ; Sungei Larut, Wray 2428 ; Changat Serdang, Wray 31 ; unlocalized, Scortechini.

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p. 327. **Chilocarpus atroviridis**, Bl.

Perak: Maxwell's hill, Scortechini 321; Larut, Kunstler 6303.

Chilocarpus embelioides, King and Gamble.

Perak: Gunong Arang Para, Scortechini 711.

Chilocarpus decipiens, H.f.

Selangor: Ulu Bubong, Kunstler 10077 and 10268.

Chilocarpus enervis, H.f.

Perak: Larut, Kunstler 3203 and 7532; Taiping, Kunstler 8528, Wray 1804; Railway line Taiping, Wray 593; Relau Tujor, Wray 4026; Larut, Scortechini 189; Gunong Bujong Malaka, Scortechini 1896.

p. 328. **Chilocarpus Cantleyi**, King and Gamble.

Perak: Waterfall Taiping, Wray 1832.

p. 329. **Leuconotis eugenifolius**, DC.

Penang: Kunstler 1452.
Perak: Ulu Selama, Scortechini 1281; Tupai, Wray 4248; Sungei Raya, Kunstler 996[a].

Leuconotis Griffithii, H.f.

Perak: Larut, Kunstler 2663 and 3080; Taiping, Scortechini 1475; Relau Tujor, Wray 4009; Tapah, Wray 1366.

p. 331. **Melodinus perakensis**, King and Gamble.

Perak: Gunong Bujong Malaka, Kunstler 7031; Gopeng, Kunstler 4481.

Melodinus coriaceus, Oliv.

Perak: Larut jungles, Kunstler 7499; Waterfall Taiping, Wray 2074.

p. 332. **Alyxia pilosa**, Miq.

Perak: Near top of Gunong Bujong Malaka, Kunstler 7170.

p. 333. **Alyxia pumila**, H.f.

Perak: Batu Kurau, Scortechini 1651.

Alyxia oleifolia, King and Gamble.

Perak: Gunong Inas, 5,000 ft., Wray 4116; Gunong Bubu, Wray 3846, Kunstler 7405; Gunong Batu Puteh 4,500 ft., Wray 230.

p. 334. **Alyxia Forbesii**, King and Gamble.

Perak: Gunong Inas, Wray 4165; Larut, 3,200–3,800 ft., Kunstler 2124; unlocalized, Scortechini.

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Alyxia Scortechinii, King and Gamble.

Perak: Gunong Batu Puteh, Wray 1091; unlocalized, Scortechini.

p. 335. **Hunteria corymbosa**, Roxb.

Penang: 800–1,000 ft., Kunstler 1468.

Perak: Gunong Arang Para, Scortechini 438[a].

Rauwolfia perakensis, King and Gamble.

Perak: L[ady] W[eld] Rest House, Scortechini 920; King prints No. 8410 Scortechini under this species in his materials. But it is very doubtful if ever so many members have been collected by Scortechini and I suppose it to be a misprint for 841. It was collected in June, 1884 from Gunong Arang Para; Gunong Ijuk, Scortechini 1161.

p. 336. **Rauwolfia sumatrana**, Jack.

Perak: Larut, Scortechini 132[b]; Kuala Dipang, Scortechini 1737; Chanderiang, Kunstler 5700.

Kopsia singapurensis, Ridl.

Syn. K. fruticosa var. albiflora, King and Gamble.

Singapore: Kunstler 1232.

p. 337. **Kopsia Scortechinii**, King and Gamble.

Perak: Gunong Bujong Malaka, Scortechini 1878.

Kopsia Griffithii, King and Gamble, var. paucinervia.

Near K.L.[1], 500–800 ft., Kunstler, 10707.

Kopsia larutensis, King and Gamble.

Perak: Blanda Mabok plains, Wray 3956; Larut, Kunstler 2882; Blanja Harah,[2] Scortechini 1704; Taiping, Scortechini 57[b].

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[1] *Mr. Burkill has this note on K.L.* K.L. must mean Kuala something, but need not mean kuala Lumpur. There are plenty of possibilities. The altitude is not high 500–800 ft. The number suggest the neighbourhood of Ulu Kal and Ulu Kerling—The Sungei Kol and the Sungei Luit descend and join the Selangor river near the road that goes over the Semangkoh pass. But there is no certainty that Kuala Luit could be meant.

'Kopsia Griffithii. There is no specimen at Kew. Ridley takes his statement from King and Gamble, where, King's collection 10707 is recorded as in dense jungle on limestone hill. I do not discover where the limestone comes in, there are limestone hills near Kuala Lumpur, but I doubt if K.L. can mean it however.' Burkill.

[2] 'Blanja Harah (is) apparently a miscopying. Blanja is on Perak river on both banks and therefore there is a Blanja Kanan (right) and a Blanja Kiri (left). Blanja ara, i.e. Blanja with the fig tree would make sense, but I have not heard of such a village.' Burkill.

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p. 341. **Ervatamia corymbosa,** King and Gamble.

Perak: On Gunong, Bujong Malaka, Kunstler 7163.

p. 342. **Ervatamia corymbosa, var. pubescens,** King and Gamble.

Perak: Gopeng, Kunstler 4830.

p. 343. **Ervatamia malaccensis,** King and Gamble.

Perak: Sungei Raya, Kunstler 1061; Gopeng, Scortechini 2024.

Ervatamia peduncularis, King and Gamble.

Perak: Larut, Scortechini 53[a], Kunstler 1858; Larut, Scortechini 226; Gunong Arang Para, 724; Bukit Gantang, plains, Wray 1892; Sungei Raya, Kunstler 846.

p. 344. **Ervatamia Curtisii,** King and Gamble.

Perak: Bruas river, Scortechini 63[a].

p. 345. **Dryera costulata,** H.f.

Perak: Gopeng, Kunstler 4689 and 8181.

Selangor: Ulu Kerling, Kunstler 8784.

p. 346. **Alstonia scholaris,** Br.

Perak: Gunong Arang Para, Scortechini 601; Tapah, Wray 170.

Alstonia spathulata, Bl.

Perak: Larut, Kunstler 7464; Batu Gajah, Scortechini 1716.

p. 350. **Parsonsia spiralis,** Wall.

Perak: Relau Tujor, Wray 2244.

Singapore: Kunstler 69.

Parsonsia Kunstleri, King and Gamble.

Perak: Larut, Kunstler 1824.

p. 351. **Parsonsia stenocarpa,** King and Gamble.

Perak: Ulu Selama, Scortechini 1292, Kota near Taiping, Wray 3263.

p. 352. **Pottsia cantoniensis,** Hook and Arn.

Perak: Relau Tujor, Wray 1904; Gopeng, Kunstler 4657.

Selangor: Ulu Bubong, Kunstler 10292 and 10988.

p. 353. **Wrightia lævis,** H.f.

Perak: Larut, Scortechini 63[b], 77[b].

Selangor: Ulu Selangor, Kunstler 8614.

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p. 354. **Strophanthus dichotomus**, DC.

Perak: Larut, Kunstler 3896, Wray 1668; Tupai, Wray 3306; Kuala Dipang, Scortechini 1740, 1819.

p. 355. **Strophanthus Wallichii**, A.DC.

Trang, Kunstler 1387. [Trang is in lower Siam.]

p. 356. **Urceola elastica**, Roxb.

Penang: Kunstler 1749.

Perak: Larut, Kunstler 2241, 2447, 4239, 3597, 4856, 5061 and 7567; Relau Tujor, Wray 1812; Simpang, Wray 2208.

Selangor: Ulu Kal, Kunstler 10348.

p. 357. **Urceola Maingayi**, H.f.

Perak: Larut, Kunstler 5139; Sungei Larut, Wray 2367.

Urceola malaccensis, H.f.

Perak: Gopeng, Kunstler 4464.

p. 358. **Urceola lucida**, Benth.

Penang: Kunstler 1329 and 4929.

Perak: Larut, Scortechini 17[b].

p. 359. **Parameria polyneura**, H.f.

Perak: Upp. P. at 300 ft. height, Wray 3459; Taiping, Scortechini 58, Larut, Kunstler 3337, 3640, 5687 and 7491; Simpang plains, Wray 2308; Kuala Dipang, Scortechini 1838.

Note.—A road was made about 1889 towards Gik as far as the Kenering river, and Wray seems to have used the opportunity of going along it. Burkill.

p. 360. **Ecdysanthera micrantha**, DC.

This is unrepresented here by any specimen.

Chonemorpha penangensis, Ridl.

Syn. C. macrophylla, King in part.

Perak: Larut, Scortechini 921; Mt. Tupai, Wray 2685; Batu Togoh, Wray 2183; Larut, Kunstler 3636; Kuala Dipang, Kunstler 7304.

Selangor: Ulu Bubong, Kunstler 10574.

p. 361. **Rhynchodia Wallichii**, Benth.

Selangor: Ulu Kerling, Kunstler 8790.

p. 362. **Anodendron Candolleanum**, Wight.

Selangor: Ulu Selangor, Kunstler 8702.

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Anodendron paucifiorum, H.f.

Perak: Waterfall, Taiping, Wray 2561; Taiping, Wray 2105.

p. 363. **Cleghornia malaccensis**, King and Gamble.

Perak: Larut, Kunstler 6351; unlocalized, Wray 3457.

Selangor: Ulu Kerling, Kunstler 8798.

Cleghornia gracilis, King and Gamble.

Perak: Caulfeild's hill, Scortechini 384; Larut, Kunstler 6351; Maxwell's hill, Wray 3209.

p. 364. **Ichnocarpus frutescens**, Ait.

Perak: Kurau, Scortechini 2199; Gunong Bujong Malaka, Kunstler 7049; near Kinta river, Kunstler 820.

Selangor: Ulu Bubong, Kunstler 10986.

Ichnocarpus ovalifolius, DC. (Non-ovalifolius).

Perak: Scortechini is unlocalized.

p. 365. **Aganosma marginata**, Don.

Perak: Trang, Kunstler 1426; Larut, Scortechini 6 and 68; Wray 3548; Gunong Bubu, Kunstler 7321.

Aganosma calycina, DC.

Selangor: Ulu Bera, Kunstler 10808.

p. 366. **Epigynum perakense**, King and Gamble.

Perak: Sungei Larut, Wray 2365; Relau Tujor, Wray 1802; Larut, Kunstler 1971, 2324 and Scortechini 1474.

p. 368. **Micrechites furcata**, Ridl.

Syn. Micrechites polyantha, King.

Perak: Larut, Kunstler 6564 and 6840; Taiping, Kunstler 8404; Gopeng, Kunstler 4430 and 5875.

Selangor: Ulu Bubong, Kunstler 10003.

Micrechites Scortechinii, Ridl.

Syn. Micrechites elliptica var. Scortechinii, King and Gamble.

Scortechini is unlocalized.

p. 371. **Phyllanthera perakensis**, King and Gamble.

Perak: Between Maxwell's hill and Simpang, Wray 3005.

Pentanura sumatrana, Bl.

Perak: Ulu Selama, Scortechini 1303; Larut, Kunstler 1825 and 3514.

p. 373. **Finlaysonia obovata**, Wall.

Perak: Matang, Scortechini 1104.

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p. 374. **Streptocaulon Wallichii**, Wight.

Penang: P. hill, King, and Kunstler 4910 and 5188.

Perak: Larut, Kunstler 2509.

p. 376. **Toxocarpus Griffithii**, Dene.

Perak: Larut, Kunstler 6205.

p. 377. **Goniostemma acuminatum**, Wight.

Syn. Toxocarpus acuminatus, H.f.

Perak: Larut, Kunstler 2520, 6546 and 6686; Taiping, Wray 3046; Sungei Larut, Wray 2369.

Selangor: Ulu Kal, Kunstler 10490.

p. 378. **Genianthus Ridleyi**, King and Gamble.

Perak: Larut, Kunstler 2612; Gunong Ijuk, Scortechini 1172.

p. 381. **Cynanchum ovalifolium**, Wight.

Perak: Larut, Kunstler 2575; Waterfall, Taiping, Wray 206; Taiping, Wray 1763; Gunong Pondok, Kunstler 8450.

p. 382. **Sarcolobus globosus**, Wall.

Perak: Krian, Scortechini 1393; Taiping, Scortechini 127.

p. 383. **Pentasacme caudatum**, Wall.

Perak: Ulu Selama, Scortechini 1300; Larut, Kunstler 1845; Waterfall, Taiping, Wray 1980.

p. 385. **Gymnema lactiferum**, Br.

Perak: Gopeng, Scortechini 2007.

p. 388. **Marsdenia Scortechinii**, King and Gamble.

Perak: Gunong Ijuk, Scortechini 1162.

p. 391. **Tylphora tenuis**, Bl.

Perak: Durian Sabatang, Kunstler 366; Assam Kumbang, Wray 2125.

Tylophora Wallichii, H.f.

Perak: Simpang, Wray 3047.

p. 393. **Heterostemma piperifolium**, King and Gamble.

Perak: Gunong Ijuk, Scortechini 1150.

Heterostemma fimbriatum, King and Gamble.

Perak: Ijuk, Scortechini 1220.

p. 395. **Hoya lacunosa**, H.f.

Perak: Kurau, Scortechini 1558.

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p. 396. **Hoya diversifolia**, Bl.

Perak: Larut, Scortechini 118[b]; Matang, Wray 2718.

Hoya Maingayi, H.f.

Perak: Gunong Arang Para, Scortechini 584[b].

Hoya parasitica, Wall.

Perak: Batu Kurau, Scortechini 1626.

Selangor: Ulu Bubong, Kunstler 10316.

p. 397. **Hoya coriacea**, Bl.

Perak: Larut hills, Scortechini 533[b].

Hoya Forbesii, King and Gamble.

Perak: Batu Kurau, Scortechini 1679 and 1680.

Hoya Finlaysonii, Wight.

Perak: Matang, Wray 2724.

p. 398. **Hoya multiflora**, Bl.

Perak: Larut, Kunstler 2423, 2543 and 7297; Gunong Arang Para, Scortechini 635.

p. 399. **Hoya obtusifolia**, Wight.

Perak: Scortechini's specimen is unlocalized.

Hoya elliptica, H.f.

Perak: Scortechini is unlocalized.

p. 400. **Hoya coronaria**, Bl.

Perak: Larut, Kunstler 3865, 4116 and 6954.

Hoya Scortechinii, King and Gamble.

Perak: Kurau, Scortechini 1557; Taiping, Scortechini 464.

p. 401. **Hoya revoluta**, Wight.

Perak: Blanda Mabok, Wray 3962.

p. 404. **Dischidia coccinea**, Griff.

Perak: Larut, Kunstler 3840 and 6905; Gunong Ijuk, Scortechini 1185.

p. 405. **Dischidia benghalensis**, Colebr.

Perak: Gunong Ijuk, Scortechini 1188.

p. 406. **Dischidia Gaudichaudii**, Dcne.

Syn. Dischidia nummularia, King.

Perak: Ulu Selama, Scortechini 1109 and 1136.

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Dischidia hirsuta, Dcne.

Perak: Waterfall, Taiping, Wray 137; unlocalized, Scortechini 180[b].

Dindings: Pangkor, Scortechini 1077.

p. 407. **Dischidia albida,** Griff.

Perak: Maxwell's hill, Scortechini 313; Gunong Ijuk, Scortechini 1227.

Dischidia cordifolia, King and Gamble.

Perak: Maxwell's hill, Scortechini 424; Larut, Scortechini 516.

p. 408. **Dischidia monticola,** King and Gamble.

Perak: Caulfeild's hill, Scortechini 423.

Dischidia acutifolia, Maing.

Perak: Scortechini unlocalized.

p. 409. **Dischidia Scortechinii,** King and Gamble.

Perak: Gunong Arang Para, Scortechini 543[a].

Dischidia tubuliflora, King and Gamble.

Perak: Maxwell's hill and Taiping, Scortechini 256[b] and 465[a]; Gopeng, Kunstler 2100.

p. 411. **Physostelma Wallichii,** Wight.

Perak: Larut, Kunstler 3457 and 3819; Maxwell's hill, Scortechini 356; Taiping, Scortechini 171.

Physostelma Wrayi, Ridl.

Syn: Hoya Wrayi, King and Gamble.

Perak: Gunong Batu Puteh, Wray 371.

p. 414. **Norrisia malaccensis,** Gardn.

Selangor: Ulu Bubong, Kunstler 10535.

Norrisia malaccensis var. major.

Perak: Gunong Arang Para, Scortechini 634; near Batang Padang river, Kunstler 7845.

Selangor: Near Ulu Selangor, Kunstler 10882.

p. 415. **Fagræa tubulosa,** Bl.

Perak: Gunong Bujong Malaka, Scortechini 1859; Chanderiang, Kunstler 5748.

p. 416. **Fagræa carnosa,** Jack.

Perak: Larut, Kunstler 5349 and 7296; Taiping, Kunstler 8452.

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p. 417. **Fagræa oblonga**, King and Gamble.

Perak: Larut, Kunstler 5340; Taiping, Kunstler 8445; Wray 2992.

p. 418. **Fagræa obovata**, Wall.

Perak: Larut, Kunstler 4204, 7518 and 7553; Taiping, Scortechini 202; Gopeng, Kunstler 6162; Gunong Batu Puteh, Wray 1139.

Selangor: Ulu Bubong, Kunstler 10109 and 10634; Ulu Bera, Kunstler 10796.

Fagræa racemosa, Jack.

Perak: Durian Sabatang, Kunstler 1118; Tapa, Wray 1285.

Selangor: Ulu Bubong, Kunstler 10085, 10304.

Fagræa vaginata, King and Gamble.

Perak: Larut, Kunstler 3868, 4041, 4238, 6605; unlocalized, Scortechini.

p. 419. **Fagræa pauciflora**, Ridl.

Syn. Fagræa racemosa, var. pauciflora, King and Gamble.

Perak: Larut, Kunstler 3242; Waterfall, Taiping, Wray 1960; Gopeng, Kunstler 707 and 4308; Batang Padang Dt., Kunstler 7798; Larut, Scortechini 112[a].

p. 420. **Fagræa crenulata**, Maing.

Perak: Kurau River, Scortechini 1642.

Fagræa lanceolata, King and Gamble.

Perak: Maxwell's hill, Wray 3202.

p. 421. **Cyrtophyllum lanceolatum**, DC.

Syn. Fagræa Wallichiana, Benth.

Penang: Kunstler 4851.

Cyrtophyllum peregrinum, Bl.

Singapore, King.

Cyrtophyllum giganteum, Ridl.

Syn. Fagræa fragrans, King (in part) non-Roxb.

Perak: Gopeng, Kunstler 6175 and 8220, Scortechini 2045.

Dindings: Pangkor, Scortechini 993.

p. 423. **Strychnos Maingayi**, Cl.

Perak: Larut, Kunstler 6291; unlocalized, Wray 3112.

Dindings: Pangkor, Scortechini 1026.

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p. 428. **Gærtnera acuminata,** Benth. var. montana Ridl.

Scortechini is unrepresented in Calcutta herbarium. Scortechini No. 305 is assigned to G. acuminata, Benth. var. montana in Herb., Singapore.

p. 429. **Gærtnera oblanceolata,** King and Gamble.

Perak: Taiping, Kunstler 8449; Gunong Arang Para, Scortechini 532.

p. 431. **Gærtnera obesa,** H.f. and var. angustifolia.

These are unrepresented here.

p. 439. **Cordia subcordata,** Lam.

Dindings: Pangkor, Scortechini 1084.

p. 440. **Tournefortia Wallichii,** DC.

Perak: Larut, Kunstler 3335, 5158, Scortechini 1494; Sungei Larut, Wray 2431; unlocalized, Wray 3536.

Singapore: Kunstler 302.

p. 441. **Heliotropium indicum,** Linn.

Perak: Taiping, Scortechini 165.

Singapore: Kunstler 318.

p. 442. **Ehretia timorensis,** DC.

Perak: Larut, Kunstler 7436; Larut, Scortechini 1^{b}; L[ady] W[eld] Rest House, Scortechini 898; Gunong Bubu, Kunstler 8344.

p. 446. **Erycibe malaccensis,** Cl.

Perak: Selama, Kunstler 3093 and 3094; Larut, Kunstler 3180 and 3575; Kurau, Scortechini 2196; Kota, Taiping, Wray 2412.

p. 447. **Erycibe Griffithii,** Cl.

Penang: Kunstler 1458.

Perak: Gopeng, Kunstler 8191.

p. 449. **Argyreia obtusifolia,** Lour.

Syn. Argyreia obtecta, Cl.

Perak: Ulu Selama, Scortechini 1384.

p. 450. **Lettsomia peguensis,** Cl.

Perak: Larut, Kunstler 2622; Batu Kurau, Scortechini 1628; Gopeng, Kunstler 1077.

Selangor: Ulu Kerling, Kunstler 8627.

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Lettsomia Maingayi, Cl.

Perak: Maxwell's hill, Scortechini 297[b].

p. 451. **Lettsomia adpressa**, Miq.

Penang: Kunstler 5271.

Perak: Ulu Selama, Scortechini 1280; Larut, Kunstler 2457 and 5400; Tupai, Wray 3298; Assam Kumbang, Wray 1914.

Lettsomia penangiana, Miq.

Perak: Ijuk, Scortechini 1147; Larut, Kunstler 1936 and 3233; Taiping, Wray 2095; Sungei Larut, Wray 2733; Relau Tujor, Wray 2601.

p. 452. **Lettsomia Scortechinii**, Prain.

Perak: Caulfeild's hill, Scortechini 381.

p. 453. **Lettsomia Kunstleri**, Prain.

Perak: Ulu Selama, Scortechini 1362; Larut, Kunstler 2307 and 2726; Kota, Wray 2856.

p. 457. **Merremia hastata**, Hallier.

Perak: Sungei Raya, Kunstler 996; Larut, Scortechini 138; Maxwell's hill, Wray 1751.

p. 458. **Merremia convolvulacea**, Dennst.

Syn. Ipomœa Chryseides, Ker.

Perak: Durian Sabatang, Kunstler 397; Kuala Dipang, Scortechini 1832.

p. 459. **Merremia umbellata**, Hallier.

Perak: Larut, Kunstler 2524; Taiping, Scortechini 11; Krian, Scortechini 1390; Sungei Raya, Kunstler 912.

p. 460. **Ipomœa digitata**, Linn.

Perak: Unlocalized, Scortechini.

p. 461. **Ipomœa littoralis**, Bl.

Syn. Ipomœa denticulata, Choisy.

Dindings: Pangkor, Scortechini 1066.

p. 462. **Ipomœa staphylina**, R. and S.

Perak: Larut, Kunstler 2538, 5091; Kinta river banks, Kunstler 1119; unlocalized, Scortechini.

Lepistemon flavescens, Bl.

Perak: Larut, Scortechini 1544; Gopeng, Kunstler 987; Sungei Raya, Kunstler 1059.

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p. 464. **Cardiopteris lobata**, Wall.

Perak: Batu Kurau, Scortechini 1586; near Kangsar river, Kunstler 986; Chanderiang, Kunstler 5799.

Pteleocarpa malaccensis, Oliv.

Perak: Upper Perak, Wray 3418.

p. 466. **Solanum parasiticum**, Bl.

Perak: Blanda Mabok, Wray 3968; Taiping, Scortechini 149[b]; unlocalized, Wray 3409.

Solanum Blumei, Nees.

Perak: Larut, Kunstler 2234; Gunong Ijuk, Scortechini 1221; Maxwell's hill, Scortechini 313[a].

Johore: Gunong Panti, Kunstler 226.

Selangor: P[ahang] P[ath], 2,500–3,000 ft., Kunstler 10930.

p. 468. **Solanum torvum**, Sw.

Perak: Taiping, Scortechini 60; Sungei Raya, Kunstler 1085.

Singapore: Kunstler 99.

p. 469. **Solanum sarmentosum**, Nees.

Scortechini is unlocalized.

p. 477. **Limnophila hirsuta**, Benth.

Perak: Sungei Raya, Kunstler 1043; unlocalized, Scortechini.

Limnophila erecta, Benth.

Unlocalized, Scortechini.

p. 482. **Torenia ciliata**, Sm.

Perak: Gunong Arang Para, Scortechini 611.

Rhio: Gunong Bintang, Kunstler 257.

p. 484. **Artanema angustifolium**, Benth.

Perak: Larut, Kunstler 3045; Matang, Wray 2721; Scortechini unlocalized.

Curanga amara, Jussieu.

Perak: Maxwell's hill, Scortechini 499[b].

p. 486. **Bonnaya veronicæfolia**, Spreng. var. verbenæfolia, H.f.

Perak: Gunong Chabang, Scortechini 12[b].

p. 489. **Christisonia Scortechinii**, Prain.

Perak: Gopeng, Scortechini 2121.

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p. 492. **Utricularia bifida**, Linn.

Province Wellesley: Kunstler 1616.

Perak: Gunong Chabang, Scortechini 12; Selama plains, Wray 4263.

Utricularia minutissima, Vahl.

Perak: Larut, Scortechini 1501.

p. 495. **Utricularia striatula**, Rees.

Syn. Utricularia orbiculata, Wall.

Perak: Gunong Inas, Wray 4146; Larut, Scortechini 376.

p. 497. **Æschynanthus purpurascens**, Hassk.

Syn. Æschynanthus motleyi, Cl.

Perak: Kurau plains, Wray 4245; Dipang, Scortechini 1815.

p. 498. **Æschynanthus perakensis**, Ridl.

Perak: Larut, Kunstler 3641 and 7022; Taiping, Kunstler 8314.

p. 499. **Æschynanthus Hildebrandtii**, Hemsl.

Perak: Gunong Ijuk, Scortechini 1187.

Æschynanthus rhododendron, Ridl.

Perak: Caulfeilds hill, 4,000 ft., Scortechini 388 (Ridley gives Plus river); Taiping, Mt. Hijau, Scortechini 58.

Æschynanthus longicalyx, Ridl.

Perak: Batang Padang, Wray 1607.

p. 500. **Æschynanthus parvifolia**, R. Br.

Syn. Æschynanthus Lobbiana, Cl.

Perak: Maxwell's hill, Scortechini 291; Caulfeilds hill, 4,000 ft., Scortechini 352; Gunong Batu Puteh, Wray 873.

Æschynanthus obconica, Cl.

Perak: Taiping, Scortechini 85; Gunong Chabang, Scortechini 28; Gunong Bujong Malaka, Scortechini 1861.

Selangor: Ulu Bubong, Kunstler 10179.

p. 502. **Didisandra frutescens**, Cl.

Perak: Unlocalized, Scortechini.

p. 503. **Didisandra atrocyanea**, Ridl.

Perak: Maxwell's hill, Scortechini 368; Gunong Bujong Malaka, Scortechini 1896.

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p. 504. **Didisandra Violacea**, Ridl.

Perak: Unlocalized, but possibly near Maxwell's hill, Scortechini 389.

p. 505. **Didisandra quercifolia**, Ridl.

Perak: Maxwell's hill, 3,000 ft., Scortechini 292.

Didisandra glabrescens, Ridl.

Perak: Gunong Batu Puteh, Kunstler 8055; Gunong Bujong Malaka, Kunstler 7191.

p. 508. **Didymocarpus corchorifolia**, R. Br.

Perak: Gunong Chabang, Scortechini 189[a]; Gunong Ijuk, Scortechini 1263; Gunong Bujong Malaka, Kunstler 7220.

Selangor: Ulu Kerling, Kunstler 8799; Ulu Bubong, Kunstler 10197.

p. 510. **Didymocarpus flava**, Ridl.

Perak: Gunong Arang Para, Scortechini 563; Maxwell's hill, Scortechini 299.

p. 511. **Didymocarpus hispida**, Ridl.

Perak: Taiping, Scortechini 40; Gunong Batu Puteh, Wray 259.

p. 515. **Didymocarpus albomarginata**, Hemsl.

Perak: Larut, Gunong Batu Puteh, Wray 65, 405 and 1204; 1,000–1,800 ft., Kunstler 1817.

p. 517. **Didymocarpus alba**, Ridl.

Perak: Taiping, Scortechini 478[b].

Didymocarpus rugosa, Ridl.

Perak: Ulu Selama, Scortechini 1273.

p. 519. **Didymocarpus crinita**, Jack.

Perak: Gunong Ijuk, Scortechini 10[a]; Maxwell's hill, 3,000 ft., Scortechini 294; Ulu Batang Padang, Wray 1493.

p. 521. **Didymocarpus pectinata**, Cl. and Oliver.

Selangor: Limestone hills near K.L. at a height of 400–800 ft., Kunstler 10711. [Near K.L. is probably between Ulu Bubong and Ulu Selangor.]

p. 524. **Chirita elata**, Ridl.

Perak: Maxwell's hill, Wray 2985; Maxwell's hill, Scortechini 311.

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p. 525. **Chirita sericea**, Ridl. var. Scortechinii.

Perak: Taiping, Scortechini 102[b].

p. 528. **Paraboea cordata**, Ridl.

Perak: Taiping, Scortechini 59; Maxwell's hill, Scortechini 296 and 400.

p. 529. **Paraboea Scortechinii**, Ridl.

Perak: Gunong Inas, Wray 4099; unlocalized, Scortechini.

p. 538. **Orchadocarpa lilacina**, Ridl.

Perak: Maxwell's hill, Scortechini 406[b].

p. 539. **Epithema saxatile**, Bl.

Perak: Batu Kurau, Scortechini 1580; Gopeng, Kunstler 5872; Sungei Raya, Kunstler 983.

Selangor: P. P. [Pahang Path] Kunstler 10941.

p. 540. **Monophyllæa patens**, Ridl.

Perak: Near Gunong Bujong Malaka, Kunstler 7052.

p. 542. **Rhynchotechum parviflorum**, Bl.

Perak: Gunong Ijuk, Scortechini 1222; Maxwell's hill, Wray 3245.

p. 543. **Cyrtandromœa megaphylla**, Hemsl.

Perak: Gunong Arang Para, Scortechini 584.

p. 544. **Cyrtandra pendula**, Bl.

Selangor: Ulu Bera, Kunstler 10810; Ulu Bubong, Kunstler 10156.

p. 545. **Cyrtandra suffruticosa**, Ridl.

Perak: Taiping, Scortechini 142[b].

Cyrtandra suffruticosa, Ridl.

Perak: Waterfall hill, Taiping, Wray 1986.

Cyrtandra pilosa, Bl.

Perak: Maxwell's hill, Scortechini 354.

p. 546. **Cyrtandra cupulata**, Ridl.

Perak: Maxwell's hill, Scortechini 366; Tapah, Wray 191 and 1389; Chanderiang, Kunstler 5733.

Selangor: Ulu Bubong, Kunstler 10250.

p. 548. **Oroxylum indicum**, Vent.

Perak: Kurau, Scortechini 1613; Kinta District, Kunstler 7033.

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p. 549. **Dolichandrone Rheedii**, Seem.

Perak: Matang, Wray 2501.

Pajanelia multijuga, DC.

Perak: Larut, Kunstler 2616 and 3958; Scortechini is unlocalized.

p. 550. **Stereospermum fimbriatum**, DC.

Perak: Batu Gajah, Scortechini 1746; Chanderiang, Kunstler 5701.

p. 556. **Thunbergia laurifolia**, Lindl.

Perak: Kurau, Scortechini 2197; Sungkei Perak, Kunstler 3030; Gunong Bubu, Kunstler 8418; Gunong Mesah, Kunstler 1064.

p. 559. **Staurogyne setigera**, Kuntze.

Perak: Larut, Kunstler 2192; Bukit Larut, Wray 1878; Gopeng, Kunstler 1132.

p. 560. **Staurogyne longifolia**, Kuntze.

Perak: Taiping, Scortechini 155[b].

Staurogyne comosa, Kuntze.

Perak: Larut, Kunstler 1874; Gunong Arang Para, Scortechini 777.

Selangor: Near K.L. (a place between Ulu Bubong and Ulu Selangor), Kunstler 10705.

p. 561. **Staurogyne Griffithiana**, Kuntze.

Perak: Sungei Raya, Scortechini 40.

Selangor: Ulu Kal, Kunstler 10335.

Staurogyne arcuata, Cl.

Perak: Gunong Arang Para, Scortechini 778.

p. 562. **Staurogyne merguensis**, Kuntze.

Perak: Ulu Selama, Scortechini 1356, Wray 4158; Maxwell's hill, Scortechini 285[a]; Gunong Pondok, Kunstler 8284; Blanda Mabok, Wray 3966.

p. 563. **Staurogyne serrulata**, Cl.

Unlocalized, Scortechini.

p. 564. **Ruellia repens**, Linn.

Perak: Ulu Selama, Scortechini 1283.

p. 566. **Hygrophila saxatilis**, Ridl.

Perak: Kampang Berkala (at mouth of Plus river), Wray 3312; unlocalized, Scortechini.

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Hygrophila quadrivalvis, Nees.

Perak: Taiping, Scortechini 84; Matang, Scortechini 1099; Matang coast, Wray 2506; Durian Sabatang, Kunstler 368.

p. 567. **Hygrophila phlomoides**, Nees.

Perak: Larut, Scortechini 1106; Gunong Arang Para, Scortechini 620; Taiping, Wray 2432.

p. 572. **Strobilanthes bibracteatus**, Bl.

Perak: Maxwell's hill, Wray 174 and 1674, Scortechini 1413 and 337.

Strobilanthes hirtisepalus, Cl.

Perak: Larut, Scortechini 940.

p. 573. **Strobilanthes rufo-pauper**, Cl.

Perak: Maxwell's hill, 3,000 ft., Wray 4192.

Strobilanthes rufo-strobilatus, Cl.

Perak: Taiping, Scortechini 225[b].

p. 574. **Strobilanthes rufo-capitatus**, Cl.

Perak: Gunong Arang Para, Scortechini 568.

Selangor: P.P. [Pahang Path], Kunstler 10925.

p. 575. **Strobilanthes pachyphyllus**, Cl.

Perak: Kuala Dipang, Scortechini 1786; near Gunong Bujong Malaka, Kunstler 7150.

p. 579. **Gymnostachyum diversifolium**, Cl.

Perak: Batu Kurau, Scortechini 1589; Gunong Pondok, Kunstler 8284.

p. 580. **Gymnostachyum pallens**, Cl.

Perak: Gopeng, Kunstler 8133.

Gymnostachyum simplicicaule, Cl.

Perak: Larut, Kunstler 3394; Gunong Arang Para, Scortechini 688.

Gymnostachyum hirtistylum, Cl.

Selangor: Near Ulu Bera, Kunstler 10814.

p. 581. **Gymnostachyum Scortechini**, Cl.

Scortechini is unlocalized.

p. 583. **Phialacanthus minor**, Cl.

Unlocalized, Scortechini.

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Phialacanthus major, Cl.

Perak: Maxwell's hill, Scortechini 249.

Selangor: P.P. [Pahang Path], Kunstler 10929.

p. 584. **Filetia paniculata**, Cl.

Perak: Gunong Arang Para, Scortechini 604^{b}.

Filetia bracteosa, Cl.

Scortechini is unlocalized.

Filetia Scortechinii, Cl.

Perak: Maxwell's hill, Scortechini 306^{b}; Ulu Batang Padang, 1,900 ft., Wray 1505; Gunong Batu Puteh, Wray 258.

p. 587. **Lepidagathis longifolia**, Wight.

Perak: Gopeng, Scortechini 2038; Tapah, Wray 1297; Scortechini unlocalized.

Selangor: Ulu Bubong, Kunstler 10040.

Lepidagathis macrantha, Cl.

Perak: Unlocalized, Wray 3385.

p. 590. **Pseuderanthemum caudifolium**, Ridl.

Syn. Eranthemum caudifolium, Cl.

Perak: Taiping, Scortechini 447^{b}.

p. 591. **Pseuderanthemum graciliflorum**, Ridl.

Syn. Eranthemum malaccense, Ridl.

Selangor: Ulu Kerling, Kunstler 5626, 8567 and 8665.

p. 592. **Pseuderanthemum Teysmannii**, Ridl.

Syn. Eranthemum Teysmannii, Cl.

Perak: Ulu Selama, Scortechini 1356; Larut, Kunstler 2176.

p. 595. **Justicia patulinervis**, Cl.

Scortechini unlocalized.

Justicia Scortechinii, Cl.

Perak: Maxwell's hill, Scortechini 387.

p. 596. **Justicia pubiflora**, Cl.

Perak: Taiping, Scortechini 8.

p. 599. **Justicia uber**, Cl.

Perak: Larut, Scortechini 96; Gunong Batu Puteh, 6,700 ft., Wray 386.

p. 600. **Justicia sumatrana**, Cl.

Perak: Gunong Arang Para, Scortechini 540^{b}.

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p. 601. **Justicia henicophylla,** Cl.

Perak: Larut, 300–500 ft., Kunstler 2189, and Scortechini 41; Changat Jerin plain, Wray 2751.

Justicia otophora, Cl.

Scortechini is unlocalized.

p. 604. **Ptyssiglottis subcordata,** Moore.

Perak: Larut, Scortechini 95[b]; Sungei Raya, Kunstler 970.

Ptyssiglottis obovata, Moore.

Perak: ? Tambang Batak (presumedly G. Tumang Batak), Scortechini.

p. 606. **Polytrema isophyllum,** Cl.

Perak: Unlocalized, Scortechini 224[b].

Polytrema crenulatum, Cl.

Scortechini is unlocalized.

p. 609. **Peristrophe acuminata,** Nees.

Perak: Larut, Scortechini 14.

Rhio: Gunong Bintang, Kunstler 285.

Peristrophe acuminata var. salicifolia.

Penang: Roadsides, King.

Perak: Kuala Wok, Wray 847; Scortechini unlocalized.

p. 614. **Callicarpa arborea,** Roxb.

Perak: Waterfall hill, Wray 1824, Kunstler 972.

Dindings: Pangkalan Bahru, Kunstler 972.

p. 615. **Callicarpa arborea var. villosa,** Gamble.

Scortechini is unlocalized.

p. 616. **Callicarpa angustifolia,** King and Gamble.

Perak: Kinta Dt., top of limestone hills at 600–800 ft., Kunstler 8236.

Callicarpa longifolia, Lam.

Penang: Waterfall at base of Penang hill, King.

Perak: Gunong Ijuk, Scortechini 1214.

Singapore: Kunstler 239.

p. 619. **Premna fœtida,** Reinw.

Kedah: Open jungles, Kunstler 1737.

Perak: Bank of Perak river, near Durian Sabatang, Kunstler 1016.

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p. 620. **Premna perakensis,** King and Gamble.

Perak: Larut, 800–1,000 ft., Kunstler 7247; Taiping, Scortechini 516[b].

Selangor: Near Ulu Kal, 800–1,000 ft., Kunstler 10738.

Premna trichostoma, Miq.

Perak: Waterfall, Taiping, Wray 2403.

Selangor: Ulu Bera, 400–600 ft., Kunstler 10310.

p. 621. **Premna sterculifolia,** King and Gamble.

Perak: Larut, at edge of hill jungles at a height of 300 ft., Kunstler 3067; Maxwell's hill, Scortechini 273[b].

Premna Ridleyi, King and Gamble.

Perak: Taiping, Scortechini 453[b].

p. 622. **Premna pyramidata,** Wall.

Perak: Larut, Kunstler 2039; Batang Padang Dt., 300–600 ft., Kunstler 8101.

Selangor: Ulu Bubong, 500–800 ft., Kunstler 10298.

Gmelina asiatica, L.

Scortechini is unlocalized.

p. 623. **Gmelina villosa,** Roxb.

Penang: Hill base, King.

Perak: Gunong Arang Para, Scortechini 740.

Singapore: Kunstler 103.

p. 624. **Clerodendron deflexum,** Wall.

Perak: Briah, Wray 4203; Gunong Ijuk, Scortechini 1230; Taiping, Scortechini 433; Larut Tea Garden above Taiping, Scortechini unnumbered; Waterfall, Taiping, Wray 2661; Maxwell's hill, Wray 3231; Larut, 2,000–3,000 ft., Kunstler 6818.

Singapore: Near Botanic Garden, King.

p. 625. **Clerodendron disparifolium,** Bl.

Penang: Kunstler 5197.

Perak: Larut, Kunstler 4130; Gopeng, Kunstler 4331; Sungei Raya, Kunstler 751 and 859; Tapah, Wray 1352; Tupai, Wray 2841.

Selangor: Ulu Kerling, Kunstler 8772.

p. 626. **Clerodendron umbratile,** King and Gamble.

Perak: Kurau, Scortechini 2198; Kapayong, Kinta, on the limestone hills, Wray 167; Larut, 3,000–3,500 ft., Kunstler

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6954; Kuala Dipang, Kunstler 8268. [Wray's Kapayong may mean Kampong, Kinta.]

Clerodendron serratum, Spreng. var. Wallichii, Cl.

Perak: Taiping, Scortechini 161 and 507; Gopeng, Kunstler 480; Changat Jerin plain, Wray 1871.

p. 628. **Clerodendron paniculatum,** Linn.

Perak: L[ady] W[eld] Rest house, Scortechini 915; Tupai plains, Wray 2433; Larut, 300–800 ft., Kunstler 6437. [Lady Weld's Rest house is within driving distance of Taiping towards Kuala Kangsar.]

Clerodendron breviflorum, Ridl.

Syn. Clerodendron Curtisii, Pearson.

Perak: Kurau, Scortechini 1555; swampy ground near Sungei Larut, Kunstler 1966 and 2507.

p. 630. **Vitex trifolia,** Linn.

Perak: Bruas river, Scortechini 1459; Gunong Arang Para, Scortechini 644.

p. 632. **Vitex Clarkeana,** King and Gamble.

Perak: Krian, Scortechini 1383.

Vitex coriacea, Cl.

Perak: Gopeng, Scortechini 2082; Gopeng, 500–800 ft., Kunstler 4388 and 4638; Batang Padang Dt., Kunstler 7782.

Vitex siamica, Williams.

Perak: Kuala Dipang, Kunstler 8264; near Gunong Bujong Malaka, Kunstler 7034.

Vitex pubescens, Vahl.

Perak: Taiping, Wray 139, Scortechini 77; Larut, Scortechini 99, L[ady] W[eld] Rest house, Scortechini 916.

p. 633. **Vitex urceolata,** Cl.

Syn. Vitex sumatrana var. urceolata.

Perak: Unlocalized, Wray 3653; Larut, Scortechini 61^{b}.

p. 634. **Vitex longisepala,** King and Gamble.

Perak: Larut, Scortechini 113^{a}; Larut, Scortechini 100; Maxwell's hill, Scortechini 340.

p. 635. **Vitex vestita,** Wall.

Penang: Hill, King.

Johore: Gunong Panti, Kunstler 176.

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Vitex gamosepala, Griff.

Perak: Larut, Scortechini 1480; Taiping, Scortechini 445.

Vitex gamosepala var. Scortechini, Gamble.

Perak: Unlocalized, Scortechini.

p. 636. **Peronema canescens**, Jack.

Perak: Gunong Ijuk, Scortechini 1160.

Johore: Near Gunong Panti, Kunstler 83.

p. 637. **Petræovitex Scortechinii**, King and Gamble.

Perak: Batu Gajah, Scortechini 1753.

p. 639. **Sphenodesma pentandra**, Jack.

Perak: Larut, Scortechini 519; near Gunong Pondok, Kunstler 7691; Gopeng, Kunstler 4532.

Selangor: Ulu Bubong, Kunstler 10642.

p. 645. **Hyptis brevipes**, Poit.

Perak: Taiping plain, Wray 3051; Taiping, Scortechini 79.

Singapore: Kunstler 146.

p. 652. **Gomphostemma crinitum**, Wall.

Perak: Kampang Kota near Taiping, Wray 3340; Gopeng, Kunstler 467.

Gomphostemma crinitum var. Griffithii, Prain.

Perak: Gunong Ijuk, Scortechini 5; Ulu Kangsar, Scortechini 928.

p. 653. **Gomphostemma Scortechinii**, Prain.

Perak: Gunong Ijuk, Scortechini 1225.

p. 654. **Gomphostemma Curtisii**, Prain.

Perak: Larut, Kunstler 2212; L[ady] W[eld] Rest house, Scortechini 924; Kampar river, Kunstler 929.

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p. 7. **Cyathula prostrata,** Bl.

Perak: Jenah, 100–200 ft., Wray 1754; Upper Perak, 300 ft., Wray 3489, 3494.

p. 8. **Aerua Curtisii,** Oliv.

Perak: Upper Perak, 300 ft., Wray 3698.

p. 12. **Polygonum chinense,** Linn.

Perak: Banks of Batang Padang river, 300–500 ft., Kunstler 7968. [Dauser regards the Malayan P. chinense as a separate species and calls it P. malaicum.]

p. 14. **Polygonum pedunculare,** Wall.

Perak: Larut, 100 ft., Kunstler 2498, Simpang, Wray 2030.

p. 15. **Apama corymbosa,** Soler.

Syn. Bragantia corymbosa, Griff.

Perak: Larut, 100–500 ft., Kunstler 2875.

Apama tomentosa, Soler.

Syn. Bragantia tomentosa, Bl.

Perak: Upper Perak, 300 ft., Wray 3471.

p. 16. **Thottea dependens,** Klotzsch.

Perak: Waterfall hill, Taiping, Wray 3151; Tapah, Wray 1318.

p. 18. **Aristolochia Tagala,** Cham.

Penang: Pulau Jerajak, 300–700 ft., Kunstler 5000.

Perak: Kota near Taiping plain, Wray 3247; Sungei Larut plains, Wray 2295; on low grounds of open jungles near Gunong Bubu, Kunstler 8359.

p. 24. **Nepenthes Macfarlanei,** Hemsl.

Perak: Gunong Bubu, 5,000–5,300 ft., Kunstler 7395.

Nepenthes Rafflesiana, Jack.

Perak: Chanderiang, 300 ft., Kunstler 5629.

p. 25. **Nepenthes phyllamphora,** Willd.

Selangor: Ulu Bubong, 400–600 ft., Kunstler 10631.

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p. 30. **Piper pentandrum,** C.DC.

Perak: Upper Perak, 300 ft., Wray 3655; unlocalized, Scortechini 114[a]; Gunong Arang Para, 779.

Piper pentandrum var. magnifolium, C.DC.

Perak: Gunong Arang Para, Scortechini unnumbered.

p. 32. **Piper muricatum,** Bl.

Perak: Larut, Kunstler 2880, 1958; Scortechini 314[a]; Waterfall hill, Taiping, 500 ft., Wray 4237, 2076; Jenah, 800 ft., Wray 1757.

p. 33. **Piper bipedale,** C.DC.

Perak: Upper Perak, 300 ft., Wray 3710.

p. 34. **Piper ribesioides,** Wall.

Perak: Sungei Raya, Kunstler 900; Taiping, 300 ft., Wray 4244; Plang plains, Wray 4243; Waterfall, Larut, 500–1,000 ft., Kunstler 6618, Scortechini 165.

p. 36. **Piper xanthocarpum,** C.DC.

Perak: Upper Perak, 1,000 ft., Wray 3795.

p. 38. **Piper caninum,** Bl.

Perak: Kuala wok, Wray 853; Upper Perak, 300 ft., Wray 3606.

p. 39. **Piper miniatum,** Bl.

Perak: Larut, 800–1,200 ft., Kunstler 7488, 1925; Waterfall, 300 ft., Wray 1959.

p. 42. **Piper stylosum,** Miq.

Perak: Larut, 100–500 ft., Kunstler 2491; Batang Padang Dt. 700–500 ft., Kunstler 7791, Gunong Batu Puteh, 4,500 ft., Wray 287.

p. 43. **Piper globulistigmum,** C.DC.

Perak: Unnumbered and unlocalized, Scortechini.

p. 44. **Piper subrubrispicum,** C.DC.

Perak: Upper Perak, 300 ft., Wray 3579.

p. 49. **Piper lonchites,** Wall.

Perak: Gunong Arang Para, Scortechini No. 619.

p. 50. **Piper Scortechinii,** C.DC.

Perak: Maxwell's hill, 3,000 ft., Scortechini 285; Gopeng, 300–500 ft., Kunstler 5906.

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p. 51. **Piper longicaule,** C.DC.

Perak: Larut, 300–800 ft., Kunstler 4048; Kota near Taiping plains, Wray 2857; Gopeng, Limestone hills, Kunstler 5876.

Piper umbellatum, Linn.

Perak: Sungei Larut plains, Wray 2467; Kuala wok, Wray 848; unlocalized, Scortechini 1360.

Selangor: Ulu Bubong, 400–600 ft., Kunstler 10070.

p. 57. **Horsfieldia Wallichii,** Warb.

Syn. Myristica Wallichii, H.f.

Perak: Maxwell's hill, Scortechini 246; Gopeng, 500–800 ft., Kunstler 4827.

Horsfieldia majuscula, Warb.

Perak: Larut, 1,500–2,000 ft., Kunstler 5051; Waterfall hill, Taiping, 2,000 ft., Wray 2218, 2064; Taiping plain, Wray 2705; Gunong Arang Para, Scortechini 897; Gopeng, 500–800 ft., Kunstler 6004.

p. 58. **Horsfieldia Irya,** Warb.

Perak: Larut, marshy ground near water, Kunstler 7447.

p. 59. **Horsfieldia brachiata,** Warb.

Perak: Batu Kurau, Scortechini No. 1649; Gopeng, within 600 ft., Kunstler 4704.

Horsfieldia Lehmanniana, Warb.

Perak: Larut, 500–1,000 ft., Kunstler 5536, 3309, 7526; Taiping, Scortechini 211.

Horsfieldia crassifolia, Warb.

Perak: Larut, within 100 ft., Kunstler 6688.

Selangor: Ulu Bubong, 400–600 ft., Kunstler 10413.

p. 60. **Horsfieldia Ridleyana,** Warb.

Perak: Gunong Arang Para, Scortechini 862.

Selangor: Ulu Bera, 700–800 ft., Kunstler 10917.

p. 61. **Gymnacranthera Forbesii,** Warb.

Perak: Larut, 500–1,000 ft., Kunstler 6591, 3783, 7645, 6784, 6973; near Gunong Bubu, at 500–800 ft., Kunstler 7419; Tapah, Wray 1429; Batang Padang District, 300–500 ft., Kunstler 8159.

Selangor: Ulu Kerling, 500–800 ft., Kunstler 8722, 8756; Ulu Bubong, 500–800 ft., Kunstler 10080.

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p. 62. **Gymnacranthera Farquhariana,** Warb.

Perak: Waterfall hill, Taiping, Wray 2084; Larut, within 100 ft., Kunstler 6736, 6622, 6548, 6631, 6932, 7481; Tapah, Wray 1436; Batang Padang District, 500–800 ft., Kunstler 7928.

p. 63. **Myristica maxima,** Warb.

Perak: Larut, Scortechini 1872.

p. 64. **Myristica Maingayi,** H.f.

Perak: Scortechini unnumbered and unlocalized.

Myristica gigantea, King.

Perak: Gopeng, Scortechini 1949.

p. 65. **Myristica elliptica,** Wall.

Perak: Tupai plains, Wray 1736, 2345; Gopeng, Scortechini 1964; Kunstler 4276, 4426, 4703; Larut, 300–500 ft., Kunstler 3732; Waterfall hill, Taiping, 300 ft.

Selangor: Ulu Selangor, 500–800 ft., Kunstler 8559.

p. 68. **Knema intermedia,** Warb.

Perak: Larut, 100 ft., Kunstler 6371, 7576, 5419; Gopeng, 300–400 ft., Kunstler 6146.

p. 69. **Knema Kunstleri,** Warb.

Perak: Blanda Mabok plains, Wray 3985; Taiping, Scortechini 175[a].

p. 70. **Knema conferta,** Warb, var. Scortechini, Warb.

Perak: Larut, 1,000–1,500 ft., Kunstler 6694; Gopeng, Kunstler 6043, 5939; Batang Padang District, 300–600 ft., Kunstler 7926; Chanderiang, 500–800 ft., Kunstler 5617.

Selangor: Ulu Bubong, 500–700 ft., Kunstler 10635.

p. 71. **Knema oblongifolia,** Warb.

Perak: Sungei Raya, Kunstler 835.

Knema oblongifolia var. monticola, King.

Selangor: P.P. (Pahang Path), 2,500–3,000 ft., Kunstler 10950.

p. 72. **Knema laurina,** Warb.

Perak: Gunong Arang Para, Scortechini 831, 8701; Gunong Bubu, 300–500 ft., Kunstler 7686.

p. 75. **Kibara serrulata,** Perkins.

Perak: Ulu Selama, Scortechini 1307.

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p. 77. **Cryptocarya Griffithiana,** Wight.

Perak: Larut, Scortechini 510[b].

Selangor: Ulu Bubong, Kunstler 10999.

p. 78. **Cryptocarya crassinervia,** Miq.

Perak: Maxwell's hill, 3,000 ft., Wray 2962; Larut, Scortechini 217; Batang Padang District, 500–800 ft., Kunstler 7935.

p. 79. **Cryptocarya tomentosa,** Bl.

Perak: Batu Kurau, Scortechini; near Batang Padang river, 200–300 ft., Kunstler 7818.

Cryptocarya ferrea, Bl.

Selangor: P.P. (Pahang Path), 1,500–2,000 ft., Kunstler 10976.

p. 80. **Cryptocarya Kurzii,** H.f.

Perak: Taiping, 200 ft., Kunstler 3042, 3901, 5250, 5320, 5395, 6571, 8469, Wray 2650.

Cryptocarya Scortechinii, Gamble.

Perak: Larut, 3,000–4,000 ft., Kunstler 6298; Gunong Arang Para, Scortechini 568, 619.

p. 84. **Beilschimedia Maingayi,** H.f.

Perak: Gunong Arang Para, Scortechini 727.

p. 85. **Beilschimedia longipes,** H.f.

Perak: Larut, Kunstler 5465, 5903; Gunong Bubu, 1,000–2,500 ft., Kunstler 7325; Gopeng, 500–800 ft., Kunstler 4765.

p. 86. **Beilschimedia membranacea,** Gamble.

Selangor: P.P. (Pahang Path), in open jungle, 2,000–3,000 ft., Kunstler No. 10928.

p. 87. **Dehaasia microcarpa,** Bl.

Perak: Trong, Wray 3188; Kuala Dipang, Scortechini No. 1842.

Selangor: Ulu Selangor, 400–600 ft., Kunstler 8655.

p. 89. **Endiandra Wrayi,** Gamble.

Perak: Upper Perak, 1,000 ft., Wray 3785.

p. 91. **Cinnamomum graciliflorum,** Gamble.

Perak: Gunong Ijuk, Scortechini 1228; Upper Perak, 300 ft., Wray 3664.

p. 98. **Alseodaphne peduncularis,** H.f.

Perak: Gunong Arang Para, Scortechini 576.

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p. 102. **Nothophœbe panduriformis,** Gamble.

Selangor: Ulu Bubong, 400–600 ft., Kunstler 10433, 10019.

Perak: Selama, Scortechini 1130; Taiping plains, Wray 2039; Batang Padang river, 200–300 ft, Kunstler 7815.

Nothophœbe reticulata, Gamble.

Perak: Larut hills, 3,500–4,000 ft., Kunstler 7002; Gunong Batu Puteh, 4,500 ft., Wray 306.

p. 105. **Phœbe macrophylla,** Bl.

Perak: Kuala Dipang, Scortechini 1779.

Phœbe Kunstleri, Gamble.

Perak: Lower camp Gunong Batu Puteh, 3,400 ft., Wray 1186.

p. 106. **Phœbe cuneata,** Bl.

Selangor: Near Ulu Kal, 400–600 ft., Kunstler 10893.

Stemmatodaphne perakensis, Gamble.

Perak: Taiping plain, Wray 2658; Kuala Dipang, Scortechini 1793.

p. 107. **Actinodaphne sesquipedalis,** H.f.

Perak: Larut, 500 ft., Kunstler 5008, 5147, 6435; Gunong Bujong Malaka, 200–500 ft., Kunstler 7202.

p. 111. **Actinodaphne oleifolia,** Gamble.

Perak: Maxwell's hill at 5,000 ft. high, Scortechini 357[b].

p. 117. **Litsæa amara,** Bl. var. fuscotomentosa, *Meissn.*

Perak: Gunong Ijuk, Scortechini.

Litsæa amara var. attenuata.

Perak: Gopeng, 500–800 ft., Kunstler 4614.

p. 118. **Litsæa cordata,** H.f.

Perak: Taiping plains, Wray 3045; Kuala Dipang, 200–300 ft., Kunstler 8269.

Selangor: Ulu Bera, 400–600 ft., Kunstler 10824.

p. 120. **Litsæa spathacea,** Gamble.

Penang: Pulau Jerajok, 100–500 ft., Kunstler 4971.

Perak: Larut, 2,500–3,000 ft., Kunstler 5280; Sungei Larut plains, Wray 2286; Relau Tujor, Wray 2198.

p. 121. **Litsæa penangiana,** H.f.

Perak: Gunong Bubu, Scortechini; Gunong Batu Puteh, 1,000–2,000 ft., Kunstler 8067.

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p. 127. **Litsæa Curtisii**, Gamble.

Perak: Taiping, Scortechini 162[b].

Litsæa nidularis, Gamble.

Perak: Ulu Kenas on Gunong Bubu, Scortechini 759.

Litsæa megacarpa, Gamble.

Perak: Maxwell's hill, Scortechini 270[b]; Gunong Arang Para, Scortechini 589.

p. 136. **Lindera cæsia**, Boerl.

Perak: Maxwell's hill, Scortechini 14.

Lindera bracteata, Boerl.

Perak: Maxwell's hill, Wray 2945; Gunong Arang Para, Scortechini 640.

p. 141. **Helicia attenuata**, Bl.

Perak: Taiping, Scortechini Nos. 195, 196; Ulu Kenas Scortechini 795; Waterfall hill, Taiping, Wray 3156; Larut, within 300 ft., Kunstler 3383; Relau Tujor, 500 ft., Wray, 4052, 3144.

Helicia petiolaris, Benn.

Perak: Larut, within 300 ft., Kunstler 5438; Taiping within 100 ft., Kunstler No. 8442; Gopeng, 500–800 ft., Kunstler No. 4641.

p. 143. **Helicia Scortechinii**, Gamble.

Perak: Larut, Scortechini No. 467.

p. 144. **Daphne pendula**, Sm.

Syn. Daphne composita, Gilg.

Perak: Larut, Scortechini No. 531[a].

p. 145. **Wickstrœmia Candolleana**, Meissn.

Perak: Gunong Inas, 5,000 ft., Wray, 4136; Larut, Scortechini No. 536; Gunong Batu Puteh, 4,500 ft., Wray 204; Gunong Bubu, Scortechini 792.

p. 146. **Linostoma pauciflorum**, Griff.

Dindings: Pangkor, Scortechini 983. (Ridley misprints Bangkor.)

p. 151. **Loranthus pulcher**, DC.

Perak: Sungei Larut plains, Wray 2296.

Loranthus pulcher var. Parishii, Gamble.

Perak: Larut, open jungles, 800–1,000 ft., Kunstler No. 6278; Larut, Scortechini No. 231.

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Loranthus pentapetalus, Roxb.

Perak: The Cottage, Larut, 4,400 ft., Wray 4240. [The cottage is one of the older houses on the hills above Taiping. It is on Birch's hill.]

Loranthus coccineus, Jack.

Perak: Maxwell's hill, Scortechini 261; Durian Sabatang, bank of the Perak river, Kunstler 1017.

Loranthus crassipetalus, King.

Perak: Maxwell's hill, Scortechini No. 363.

Loranthus productus, King.

Perak: Maxwell's hill, Scortechini No. 391; Gunong Arang Para, Scortechini 581.

p. 153. **Loranthus ferrugineus**, Roxb.

Perak: Gopeng, Scortechini 2099; Gunong Chabang, Scortechini 22.

Loranthus Lobbii, H.f.

Perak: Gunong Batu Puteh, 3,000–4,000 ft., Kunstler 8061.

p. 154. **Loranthus malaccensis**, H.f.

Perak: Maxwell's hill, Scortechini 311.

p. 155. **Loranthus pentandrus**, Linn.

Penang: Pulau Jerajak, within 100 ft., Kunstler 4931.

Perak: Waterfall hill, Taiping, Wray 2062; Relau Tujor, Wray 1903, 1839. Gunong Arang Para, Scortechini 605; Tapah, Wray 1267; Batang Padang Dt., 300–800 ft., Kunstler 7767.

Loranthus grandifrons, King.

Perak: Kota Taiping plains, Wray 1958.

p. 156. **Loranthus Duthieanus**, King.

Perak: Scortechini unnumbered and unlocalized.

p. 157. **Loxanthera speciosa**, Bl.

Perak: Ulu Selama, Scortechini 1328; Kinta river, Kunstler 767.

p. 158. **Elytranthe formosa**, Don.

Perak: Maxwell's hill, Scortechini 392; Larut hills, 3,000–4,000 ft., Kunstler 2170 and 6264.

p. 159. **Elytranthe platyphylla**, Gamble.

Perak: Gunong Arang Para, Scortechini 606.

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p. 160. **Elytranthe Lowii**, Gamble.

Perak: Unlocalized, Scortechini 861.

p. 161. **Elytranthe globosa**, Don. var. puberula.

Perak: Gunong Chabang, Scortechini 258.

p. 162. **Elytranthe Wrayi**, Gamble.

Perak: Upper Perak, 1,000 ft., Wray 3770.

Lepeostegeres Beccari, Gamble.

Perak: Gunong Ijuk, Scortechini 1208.

Lepeostegeres Kingii, Gamble.

Perak: Gunong Ijuk, Scortechini 1251.

p. 163. **Ginalloa siamica**, Craib. var. Scortechinii Gamble.

Perak: Unlocalized, Scortechini.

p. 164. **Viscum orientale**, Willd. var. ovalifolium, Miq.

Perak: L[ady] W[eld] rest house, Scortechini 732.

Viscum dichotomum, Don.

Perak: Larut, within 300 ft., Kunstler 4191.

p. 170. **Henslowia varians**, Bl.

Penang: 500–1,000 ft., Kunstler 5213.

Dindings: Scortechini.

p. 181. **Euphorbia Atota**, Forst.

Dindings: Pangkor, Scortechini 1000.

p. 183. **Bridelia stipularis**, Bl.

Perak: Banks of Kinta river, Kunstler 813 (non-Scortechini).

p. 184. **Bridelia tomentosa**, Bl.

Perak: Near Kampar river, Kunstler 991; Larut, 100–300 ft., Kunstler 2492, 2676, 5384.

p. 185. **Bridelia cinnamomea**, H.f.

Perak: Taiping plains, Wray 2391; Taiping, 300–500 ft., Kunstler 8392; Assam Kumbong plains, Wray 2121; near Gunong Bujong Malaka, Kinta, 200–300 ft., Kunstler 7101; Batang Padang Dt., 200–300 ft., Kunstler 7960, 7989.

Selangor: Ulu Bubong, 400–600 ft., Kunstler 10612.

Bridelia penangiana, H.f.

Penang: 600–800 ft., Kunstler 1350.

Selangor: Near rivers in open bamboo forests of Ulu Kerling, at 400–600 ft. height, Kunstler 8576.

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p. 187. **Cleistanthus bracteosus**, Jabl.

Perak: Upper Perak, 300 ft., Wray 3648; Kuala Dipang, Scortechini 1917.

p. 189. **Cleistanthus hirsutopetalus**, Gage.

Perak: Larut, 100–500 ft., Kunstler 4178.

Cleistanthus podocarpus, H.f.

Perak: Gunong Bubu range, 300–500 ft., Kunstler 7744.

p. 190. **Cleistanthus gracilis**, H.f.

Kedah: Between limestone rocks at about 300 ft. height, Kunstler 1709. No Scortechinian specimen in Sibpur, but Kew is said to possess one of Scortechini.

p. 191. **Cleistanthus decurrens**, H.f.

Perak: Kinta, Kunstler 4285, 4637. Scortechini without locality.

p. 192. **Cleistanthus macrophyllus**, H.f.

Perak: Kuala Dipang, Scortechini 1759.

p. 193. **Cleistanthus Maingayi**, H.f.

Perak: Without locality, Scortechini.

p. 195. **Cleistanthus perakensis**, Gage.

Perak: Kuala Dipang, Scortechini 1822.

p. 209. **Glochidion microbotrys**, H.f.

Perak: Larut, in open jungles, at 500–800 ft., Kunstler 7479.

p. 211. **Glochidion villicaule**, H.f.

No Malayan specimen in Calcutta. But Kew have Scortechini specimen without number.

p. 213. **Glochidion perakense**, H.f.

Perak: Larut, Scortechini 111[a]; Sungei Larut plains, Wray 2360; Durian Sabatang, Kunstler (non-Wray) 1033. Ridley mentions Sabatang for Wray and Sungei Batang for Kunstler, which they are not according to Sibpur sheets.

p. 218. **Breynia rhamnoides**, Muell Arg.

Kew has Scortechini 1128, but there is no specimen at Calcutta.

Breynia coronata, H.f.

Selangor: Ulu Bubong, dense bamboo forests, at 400–600 ft., Kunstler 10160.

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p. 220. **Sauropus forcipatus**, H.f.

Perak: Gunong Ijuk, Scortechini 1254; Larut, Scortechini 112.

p. 225. **Antidesma Kunstleri**, Gage.

Perak: Gunong Arang Para, Scortechini 629.

p. 226. **Antidesma stipulare**, Bl.

Syn. Antidesma stenophyllum, Gage.

Perak: Gunong Arang Para, Scortechini 638; Gopeng, 300–800 ft., Kunstler 4249; Batang Padang Dt., 300–500 ft., Kunstler 7880.

p. 228. **Antidesma salicinum**, Ridl.

Syn. Antidesma salicifolium, H.f.

Selangor: Banks of rivers near Ulu Selangor, 300–500 ft., Kunstler 8690.

p. 232. **Antidesma cuspidatum**, Muell Arg.

Perak: Larut, up to 1,000 ft., Kunstler 2314, 3464, 4062; Tapah, Wray 1253; Gunong Batu Puteh, Wray 1694.

Selangor: Ulu Bubong, 500–700 ft., Kunstler 10169 and 10619.

p. 235. **Daphniphyllum Scortechinii**, H.f.

Perak: Top of Gunong Bubu, 5,000–5,300 ft., Kunstler 7326, 7335, Wray 3824, 3847, 3926; Gunong Batu Puteh, 3,000–4,000 ft., Kunstler 8031, 8054, Wray 218 from 4,500 ft. and 324 from the summit at 6,700 ft.

p. 237. **Aporosa globifera**, H.f.

Perak: Upper Perak, 300 ft., Wray 3686; near Gunong Pondok, 1,500–2,000 ft., Kunstler 7688; near Gunong Bujong Malaka, 200–300 ft., Kunstler 7060.

p. 244. **Baccaurea Scortechinii**, H.f.

There is no specimen of Scortechini in Sibpur. Singapore has Kuala Dipang, Scortechini 1922. Kew has the same and also No. 2002.

p. 246. **Baccaurea reticulata**, H.f.

Perak: Gopeng, Scortechini 1956.

p. 248. **Baccaurea Kunstleri**, Gage.

Perak: Gopeng, 300–500 ft., Kunstler 8139.

p. 264. **Trigonostemon indicus**, Muell Arg.

Penang: Kunstler 1379, 1655, 5217.

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Perak: Blanda Mabok plains, Wray 4000; Briah, Larut, Wray 4204; Waterfall hill, Taiping, Wray 2633; Gunong Arang Para, Scortechini 611; Gopeng, Kunstler 1101.

Trigonostemon longifolius, Baill.

Perak: Ulu Selama, Scortechini 1291; Larut, 500–800 ft., Kunstler 4109, 5224.

Penang: Kunstler 1563.

p. 265. **Trigonostemon villosus,** H.f.

Perak: Larut, 1,000–2,000 ft., Kunstler 2400; Changat Jerin plains, Wray 2755; Gopeng, at 500–800 ft., Kunstler 4819.

p. 268. **Agrostistachys borneensis,** Becc.

Syn. Agrostistachys longifolia var. latifolia, H.f.

No Scortechinian specimen in Sibpur, only Kunstler collected this. Mr. Burkill says that Kew has two Scortechini specimens, one No. 1985, the other without number.

Agrostistachys Gaudichaudii, Muell Arg.

Perak: Gopeng, 500–800 ft., Kunstler 4669.

Selangor: Ulu Kerling, 500–800 ft., Kunstler 8555 and 8629.

p. 277. **Alchornea villosa,** Muell Arg.

Perak: Larut, 100 ft., Kunstler 1950; Sungei Larut plains, Wray 2729; Relau Tujor, Wray 1773.

p. 280. **Cœlodiscus subcuneatus,** Gage.

Perak: Gunong Arang Para, Scortechini 530^{b}.

Selangor: P.P. (Pahang Path), Kunstler 10967.

p. 281. **Blumeodendron Kurzii,** J.J.Sm.

Perak: Near Gunong Bujong Malaka (non-G. Mesah), 300–500 ft., Kunstler 7114.

p. 288. **Mallotus smilaciformis,** Gage.

Perak: Ulu Selama, 500–800 ft., Kunstler 3134 and 3145.

Mallotus macrostachys, Muell Arg.

Perak: Batang Padang Dt., Kunstler 7858.

p. 289. **Mallotus cochinchinensis,** Lour.

Selangor: Ulu Bubong, Kunstler 10452.

p. 290. **Mallotus subpeltatus,** Muell Arg.

Perak: Batu Gajah, Scortechini 1723.

p. 292. **Mallotus repandus,** Muell Arg.

Perak: Kampong kota, Wray 3330.

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p. 293. **Mallotus anisophyllus**, H.f.

Perak: Near Kinta river, Kunstler 817.

p. 299. **Macaranga Griffithiana**, Muell Arg.

Perak: Unlocalized, Scortechini; Taiping, Wray 138.

p. 303. **Macaranga trichocarpa**, Muell Arg.

Perak: Gunong Ijuk, Scortechini 1250.

p. 310. **Polydragma mallotiformis**, H.f.

Perak: Batu Gajah, Scortechini 1762.

p. 312. **Boliospermum axillare**, Bl.

Perak: Unlocalized, Scortechini.

p. 329. **Ficus gibbosa**, Bl.

Selangor: Ulu Bubong, Kunstler 10374. (Kew is said to have a specimen of Scortechini without locality.)

p. 332. **Ficus rigida**, Miq.

Perak: Gopeng, 500–800 ft., Kunstler 6044. Kew is said to have a Scortechini specimen, without locality, but none in Sibpur.

p. 337. **Ficus vasculosa**, Wall.

Penang: Kunstler 1377, 1438, 64832.

Dindings: Pangkor, Scortechini 1032.

p. 340. **Ficus copiosa**, Steud.

Perak: Maxwell's hill, Wray 1732.

p. 343. **Ficus Scortechinii**, *King*.

Kampar river is to the south and Sungei Raya is to the north of Gopeng. No. 922 of Kunstler was collected at Sungei Raya and it is quite possible that No. 934, which King quotes under this species, was either collected on the banks of the Kampar river or near to Gopeng. Kampar is the correct name and not Kampo.

Ficus lepicarpa, Bl.

Perak: Waterfall hill, Taiping, Wray 1952.

p. 344. **Ficus lævis**, Bl.

Perak: Ulu Leding, Wray 2018.

p. 347. **Ficus fulva**, Reinw.

There is no Scortechini specimen in Sibpur. But Kew is said to have one of his without locality.

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p. 349. **Ficus variolosa**, Lindl.

Perak: Top of Hijau, 4,500–4,600 ft., Kunstler 7016 and 3674.

p. 357. **Conocephalus Scortechinii**, H.f.

Perak: Larut, Scortechini 144[b].

p. 360. **Laportea stimulans**, Miq.

Perak: Ijuk, Scortechini 1170; Gunong Arang Para, Scortechini 643[b]; Larut, 500–800 ft., Kunstler 4027, 5593; near Gunong Bujong Malaka, 300–500 ft., Kinta District, Kunstler 7142.

Laportea pustulosa, Ridl.

Perak: Kuala Dipang, Scortechini 1817.

p. 370. **Engelhardtia Wallichiana**, Lindl.

Perak: Gunong Inas, Scortechini 1329.

p. 373. **Quercus oidocarpa**, Korth.

Perak: Larut, Kunstler 3723; Kuala Dipang, 200–300 ft., Kunstler 8258.

p. 376. **Pasania Kunstleri**, Gamble.

Perak: Larut, Scortechini 1567.

p. 377. **Pasania spicata**, Oerst. var. microcalyx.

Selangor: P.P. (Pahang Path), 2,500–3,000 ft., Kunstler 10947.

p. 378. **Pasania Lamponga**, Gamble.

Perak: Larut, Scortechini 1472, Kunstler 3878, 6910, 7278.

Pasania Lamponga var. ewyckioides, Gamble.

Perak: Gopeng, 500–1,000 ft., Kunstler 6449; Batang Padang District, 500–800 ft., Kunstler 7777.

Selangor: Ulu Slim, Kunstler 10884.

p. 379. **Pasania sundaica**, Oerst.

Perak: Near Gunong Bubu, 500–800 ft., Kunstler 7371.

Pasania hystrix, Gamble.

Perak: Batang Padang District, 500–800 ft., Kunstler 7895.

Pasania hystrix var. longispica.

Perak: Scortechini (without locality and number).

p. 382. **Pasania rassa**, Gamble.

Perak: Maxwell's hill, Scortechini 329[b].

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p. 383. **Pasania lucida,** Gamble.

Perak: Ulu Selama, Wray 4177; Waterfall hill, Taiping, 2,000 ft., Wray 2217; Gunong Batu Puteh, Wray 998, 1190.

p. 390. **Castanopsis sumatrana,** A.DC.

Perak: Batu Togoh, 200 ft., Wray 2168; Taiping, Scortechini 167.

p. 391. **Castanopsis nephelioides,** King.

Perak: Gunong Ijuk, Scortechini 1153; Fort of Gunong Bujong Malaka, 200–300 ft., Kunstler 7208, 7231, 7255.

Selangor: Ulu Kerling, 400–600 ft., Kunstler 8624.

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p. 14. **Oberonia Prainiana**, King.

Perak: Gunong Arang Para, Scortechini 582[b].

Oberonia subnavicularis, King.

Perak: Gunong Ijuk (? G. Hijau), Scortechini 1202.

p. 17. **Oberonia Bertoldi**, King.

Perak: Lampang, ? Simpang, near Taiping, Scortechini 1529.

Oberonia intermedia, King.

Perak: Larut, Scortechini 1516.

p. 18. **Oberonia caudata**, King.

Perak: Maxwell's hill, Scortechini 315[b].

Oberonia Rolfeana, King.

Perak: Kurau, Scortechini 2193.

p. 21. **Liparis Wrayi**, H.f.

Perak: Upper Perak, at 300 ft., Wray No. 3713.

p. 25. **Platyclinis linearifolia**, Ridl.

Syn. Dendrochilum linearifolium, H.f.

Perak: Gunong Chabang (non-Chosang), Scortechini 259; Gunong Bubu, Scortechini 882.

p. 29. **Desmotrichum lonchophyllum**, Kranzl.

Perak: Ulu Selama, Scortechini 1394.

p. 35. **Dendrobium eulophotum**, Lindl.

Perak: Taiping, Scortechini 438[b].

p. 36. **Dendrobium grande**, H.f.

Perak: Gunong Ijuk, Scortechini 1269.

p. 39. **Dendrobium subulatum**, H.f.

Perak: Maxwell's hill, Scortechini 302[a].

p. 41. **Dendrobium truncatum**, Lindl.

Syn. Dendrobium clavipes, H.f.

Perak: Kurau, Scortechini 2184.

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p. 46. **Dendrobium lamellatum,** Lindl.

Perak: Gunong Ijuk, Scortechini 1180; Gunong Arang Para, Scortechini 560; near Gunong Bujong Malaka, Kunstler 7197.

p. 47. **Dendrobium serpens,** H.f.

Syn. Dendrobium panduriferum var. serpens.

Perak: Probably Larut, Kunstler.

p. 49. **Dendrobium tropæoliflorum,** H.f.

Perak: Larut, Kunstler.

p. 69. **Bulbophyllum Stella,** Ridl.

Syn. Bulbophyllum vanessa, King.

Perak: Taiping, Scortechini 434.

Bulbophyllum clandestinum, Lindl.

Perak: Taiping, Scortechini 441[b].

p. 72. **Bulbophyllum leptosepalum,** H.f.

Perak: Gunong Arang Para, Scortechini 613[a].

Bulbophyllum linearifolium, King.

Perak: No locality, Scortechini.

p. 73. **Bulbophyllum globulus,** H.f.

Perak: Gunong Chabang, Scortechini 27.

p. 88. **Eria Scortechinii,** H.f.

Perak: Gunong Inas, Wray 4137; Maxwell's hill, Scortechini 372[b]; Gunong Bubu, Wray 3854 and 3895.

p. 89. **Eria floribunda,** Lindl.

Perak: Gunong Inas, Scortechini 1345.

p. 92. **Eria recurvata,** H.f.

This was figured and described from a specimen which flowered in the Calcutta Garden in 1882. This must have been forwarded by Kunstler without any number and locality, but I suspect that he forwarded it from Larut.

p. 96. **Eria stellata,** Lindl.

Syn. Dendrobium perakense, H.f.

Perak: Gopeng, Scortechini 1967.

Eria elata, H.f.

Perak: Gunong Arang Para, Scortechini 569[b].

p. 99. **Eria pannea,** Lindl.

Perak: Taiping, Scortechini 475[b].

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Eria teretifolia, Griff.

Syn. Eria pellipes H.f.

Perak: Taiping, Scortechini 517[a].

p. 103. **Trichotosia biflora,** Griff.

Syn. Eria monticola, H.f.

Perak: Simpang, Scortechini 1664.

p. 104. **Trichotosia gracilis,** Kranzl.

Syn. Eria gracilis, H.f.

Perak: Unlocalized, Scortechini.

Tylostylis rigida, Bl.

Syn. Eria pulchella, Lindl.

Perak: Gunong Arang Para, Scortechini 556; Tampan, Scortechini 1521 in November 1884. Burkill says 'Kota Tampan is 4 days' poling upstream from Kuala Kangsor, just where Upper Perak begins. If Scortechini got his plant there, it is the first indication known to me of a journey upstream from Kuala Kangsor. As Tampan is a very rare village name, one must suppose Scortechini went to it or someone brought a plant to him from it. Tampang, on the other hand, is a quite prominent name'.

p. 107. **Agrostophyllum glumaceum,** H f.

Perak: Kuala Dipang, Scortechini 1810.

Agrostophyllum majus, H.f.

Perak: Taiping, Scortechini 436[b].

p. 108. **Poæphyllum pauciflorum,** Ridl.

Syn. Agrostyphyllum pauciflorum, H.f.

Perak: Ulu Kwansa (is possibly Ulu Kangsar), Scortechini 929.

p. 109. **Ceratostylis subulata,** Bl.

Syn. Ceratostylis malakensis, H.f.

Perak: Top of Tambok Batak, Scortechini 562[b]; Gunong Ijuk, Scortechini 1246; Sampstow, probably a place near Larut, Scortechini 1561; Ulu Batang Padang, 4,900 ft., Wray 1547; Gunong Bubu, Wray 3904.

Ceratostylis lancifolia, H.f.

Perak: Top of Tambok Batak, Scortechini 561[b]; overhanging Batang Padang river, Kunstler 7927.

p. 110. **Ceratostylis, eriæoides,** H.f.

Syn. E. Pygmæa, H.f.

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Perak: Gunong Inas, 5,000 ft., Wray 4072; Top of Tambak Batak, Scortechini 560[b]; Ulu Batang Padang, 4,900 ft., Wray 1510.

p. 111. **Ceratostylis clathrata**, H.f.

Perak: Maxwell's hill, Scortechini 365[b].

p. 114. **Tainia latilingua**, H.f.

Perak: Larut, 3,000–4,000 ft., Kunstler 4120; Taiping, Scortechini 159[b].

Selangor: Ulu Bubong, Kunstler 10018.

Tainia speciosa, Bl.

Perak: Maxwell's hill, Scortechini 386[b].

p. 135. **Cœlogyne anceps**, H.f.

Perak: Gunong Inas, Scortechini 1333.

p. 137. **Crinonia parviflora**, Pfitzer.

Syn. Pholidota micrantha, H.f.

Pholidota parviflora, H.f.

Perak: Summit of Gunong Batu Puteh, 6,000 ft., Wray 890.

N.B.—No Scortechinian specimen was seen in Sibpur.

p. 141. **Eulophia squalida**, Lindl.

Syn. Eulophia elata, H.f.

Perak: Gopeng, Scortechini 2023; in part, Ipoh, Kinta, Wray 4017.

p. 142. **Eulophia macrorrhiza**, Bl.

Perak: Gopeng, Scortechini drawing No. 2023.

p. 148. **Dipodium paludosum**, Rchb.f.

Perak: Gunong Batu Puteh, 4,900 ft., Wray 1020.

p. 149. **Grammatophyllum speciosum**, Bl.

Perak: ? Pandon, probably Gunong Pondok as this is evidently not remote from Taiping, Scortechini 1451; Kinta, Kunstler 7217.

p. 154. **Adenoncos virens**, Bl.

Syn. Microsaccus virens, H.f.

Perak: Sampong (? Simpang), Scortechini 1529.

p. 156. **Phalænopsis violacea**, Teysm and Binn var. typica.

Perak: Figured from a plant flowering in the residency of Kuala Kangsar, Scortechini 2[b]. Scortechini writes 'Sir Hugh Low says it comes from Patani'.

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Phalænopsis cornu-cervi, Par. and Rchb.

Perak: Ulu Selama, Scortechini 1286; Maxwell's hill, Scortechini 305[a].

p. 162. **Trichoglottis scaphigera,** Ridl.

There are two sheets in this herbarium, one No. 1213 of Scortechini from Gunong Ijuk with a drawing by Father Scortechini attached and named by J.D.H. as Trichoglottis rigida, Bl. with a question mark and a sheet No. 1231 of Wray from Gunong Batu Puteh also named Trichoglottis 'rigida'?, which I think, from Ridley's description, to be Trichoglottis scaphigera, Ridl.

p. 166. **Saccolabium minimiflorum,** H.f.

Perak: Gunong Arang Para, Scortechini 635[b].

p. 167. **Saccolabium hortense,** Ridl.

Not available in Sibpur. Kew has 1526 of Scortechini.

p. 169. **Saccolabium Kunstleri,** Ridl.

Syn. Sarcanthus Kunstleri, King and Pantling.

It is written on the sheet that the specimen is sent by Kunstler from Perak.

Saccolabium Scortechinii, Ridl.

Syn. Sarcanthus Scortechinii, H.f.

Perak: Gunong Arang Para, Scortechini 585[b].

p. 170. **Saccolabium densiflorum,** Lindl.

Syn. Cleisostonia spicatum, Lindl.

Perak: Gopeng, Scortechini 2075.

p. 171. **Saccolabium tenuicaule,** H.f.

Perak: Larut, Scortechini 935; Gunong Batu Puteh, Wray 1092, 1625.

p. 175. **Microsaccus javensis,** Bl.

Not available. There is a specimen at Kew.

p. 178. **Sarcochilus unguiculatus,** Lindl.

Syn. Sarcochilus aureus, H.f.

Perak: Unlocalized, Kunstler.

p. 179. **Sarcochilus cladostachys,** H.f.

Perak: Selama, Scortechini 1110.

Kunstler's drawing only made from specimen that flowered in H.B.C. Said to have been forwarded by Kunstler from Malaya.

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Sarcochilus stenoglottis, H.f.

N.B.—On a sheet of manuscript note attached to the drawing of this species is written Sumatra orchid, flowered 18-8-82 Kunstler and flowered in H.B.C. 4-8-83, Malaya Kunstler. There is nothing in Sibpur to show whether this plant was collected from the Malayan Peninsula or the Malayan Archipelago. Mr. Burkill says 'but Singapore possesses a specimen labelled "Kemuning Machado"'. Machado collected when as an assistant on the Kemuning estate between Kuala Kangsar and Ipoh. There is no Scortechini specimen at Kew.

p. 181. **Ascochilus hirtulus**, Ridl.

Syn. Sarcochilus hirtullus, H.f.

Perak: Batu Kurau, Scortechini 1599.

p. 182. **Ascochilus hirsutus**, Ridl.

Syn. Sarcochilus hirsutus, H.f.

Perak: Top of limestone hill, Kuala Dipang, Scortechini 1799.

p. 184. **Thrixspermum lilacinum**, Rchb.f.

Syn. Sarcochilus lilacinus, Griff.

Dindings: Pangkor, Scortechini 1452.

Thrixspermum pauciflorum, Ridl.

Syn. Sarcochilus pauciflorus, H.f.

Perak: Larut range at 5,000 ft. high, Scortechini 534[a].

p. 185. **Thrixspermum Scortechinii**, Ridl.

Syn. Sarcochilus Scortechinii, H.f.

Perak: Taiping, Scortechini 440[b].

p. 197. **Appendicula reflexa**, Bl.

Syn. Appendicula cordata, H.f.

Perak: Scortechinian sheet unnumbered and unlocalized.

p. 198. **Appendicula pendula**, Bl.

Syn. Appendicula Maingayi, H.f.

Perak: Gunong Bujong Malaka, Scortechini 1865.

p. 199. **Thelasis elongata**, Bl.

No Scortechini's specimen from Perak.

Thelasis capitata, Bl.

Perak: Sampong (? Simpang), Scortechini 1523.

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p. 205. **Corysanthes fornicata,** Lindl.

Perak: Gunong Inas, Scortechini 1330 in Sept. 1884. Scortechini writes that he also collected at Tambak Batak, which I think is a place very near Gunong Arang Para.

p. 206. **Didymoplexis pallens,** Griff.

Perak: Maxwell's hill, Scortechini 313[b]. Wray's specimen not seen in Sibpur, but Kew has Wray's Upper Perak No. 3588 besides Scortechini's.

p. 208. **Gastrodia Hasselti,** Bl.

Perak: Gunong Ijuk, Scortechini 1270.

p. 210. **Vrydagzynea lancifolia,** Ridl.

Perak: Maxwell's hill, Scortechini 1417.

p. 211. **Vrydagzynea tristriata,** Ridl.

Perak: Gunong Arang Para, Scortechini 849.

p. 214. **Anæctochilus calcaratus,** Ridl.

Syn. Odontochilus brevistylis, H.f.

Perak: Gunong Inas, Scortechini 1339[b]; Upper Perak, 300 ft., Wray 3705.

Anæctochilus macranthus, Ridl.

Syn. Odontochilus macranthus, H.f.

Perak: Gunong Arang Para, Scortechini 604.

p. 217. **Zeuxine reniformis,** H.f.

Perak: Kuala Dipang, Scortechini 1770.

p. 219. **Goodyera pusilla,** Bl.

Specimen not available in Sibpur, but Kew is said to have Scortechini 1256, without locality.

p. 220. **Goodyera cordata,** H.f.

Perak: Gunong Ijuk, Scortechini 1258.

p. 223. **Hylophila lanceolata,** H.f.

Perak: Gunong Batu Puteh, Wray 956. Scortechinian sheet is unnumbered and unlocalized.

p. 259. **Zingiber Wrayi,** Prain.

Perak: Upper Perak, at 300 ft., Wray 3725.

p. 266. **Amomum macrodons,** Scort.

Perak: Gunong Arang Para, Scortechini 614; Gopeng, Scortechini 2027.

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p. 14. **Iguanura spectabilis**, Ridl.

Syn. Iguanura Wallichiana var. major.

Perak: Ulu Selama, Kunstler 3127.

p. 15. **Iguanura diffusa**, Becc.

No specimen seen.

p. 16. **Iguanura bicornis**, Becc.

Perak: Gunong Batu Puteh, 4,900 ft., Wray 396. Ridley quotes Scortechini also.

p. 21. **Caryota mitis**, Lour.

Perak: ? Unlocalized, Wray 3744.

p. 25. **Licuala paludosa**, Griff.

Perak: Taiping, 300–500 ft., Kunstler 8534; Matang Jambu plains, Wray 2527; Gunong Bubu, 2,500–3,000 ft., Kunstler 7339 and Wray 3928.

Licuala spinosa, Wurmb.

Ridley's Mata Lumbu should be Matang Jambu (Wray).

p. 26. **Licuala malayana**, Becc.

Perak: Sungei Larut Plain, Wray 2471.

Licuala ferruginea, Becc.

Perak: Sunki 'Sungkai', Kunstler 3041.

Licuala glabra, Griff.

Perak: Gunong Batu Puteh, 4,500 ft., Wray 254 and Kunstler 8148.

p. 28. **Licuala triphylla**, Griff.

Perak: Sungei Raya, Kunstler 852 and Sunki 'Sungkai', Perak, Kunstler 3007.

Licuala modesta, Becc.

Perak: Taiping plains, Wray 2092.

p. 30. **Licuala Scortechinii**, Becc.

No specimen.

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p. 36. **Dæmonorops Scortechinii,** Becc.
Not seen.

p. 38. **Dæmonorops grandis,** Mart.
Syn. Dæmonorops intermedius, Mart.
Perak: Gunong Bujong Malaka, Kunstler 7135.

p. 42. **Dæmonorops leptopus,** Mart.
Perak: Gunong Batu Puteh, Wray 1145.

Dæmonorops hystrix, Mart.
Perak: Sungei Raya, Kunstler 951.

p. 44. **Dæmonorops geniculatus,** Mart.
Perak: Assam Kumbang plains, Wray 1922; Batang Padang Dt., Kunstler 7849; Gopeng, Kunstler 576.

p. 45. **Dæmonorops verticillaris,** Mart.
Perak: Larut, Kunstler 6388; Gopeng, Kunstler 576^{b}.

p. 47. **Calospatha Scortechinii,** Becc.
No specimen here.

p. 53. **Calamus manan,** Miq.
Specimen not seen in Sibpur, apparently the type is with Beccari's plants in Florence.

p. 61. **Calamus palustris,** Griff.
No specimen in Sibpur, but Ridley quotes Scortechini 50^{b}.

Calamus brevispadix, Ridl.
Perak: Gunong Bubu at 5,000 ft., Wray 3923.

Calamus elegans, Ridl.
There is no specimen in Sibpur.

Calamus Viridispinus, Becc.
Perak: Larut, Kunstler 4127.

p. 62. **Calamus pallidus,** Becc.
Perak: Taiping plain, Wray 2392; Simpang plains, 3017.

p. 63. **Calamus castaneus,** Griff.
Perak: Gopeng, Kunstler 5880.

p. 65. **Plectocomiopsis geminiflorus,** Becc.
There is no specimen in Sibpur.

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Plectocomiopsis Wrayi, Becc.

Perak: Larut, Kunstler 3447, 5282; Sungei Larut plain, Wray 2421, 2422; unlocalized, Wray.

p. 67. **Plectocomiopsis Scortechinii**, Ridl.

Syn. Myrialepis Scortechinii, Becc.

Perak: Taiping, Scortechini 457[b].

p. 68. **Korthalsia Scortechinii**, Becc.

Specimen not seen.

p. 87. **Cryptocoryne affinis**, N.E.Br.

Perak: Briah, Larut, Wray 4198; Gunong Arang Para, Scortechini 586[b].

p. 89. **Arisæma Scortechinii**, H.f.

Perak: Gunong Arang Para, Scortechini 553.

p. 94. **Amorphophallus perakensis**, Engl.

Perak: Unlocalized, Wray 3474.

p. 105. **Homalonema deltoidea**, H.f.

Dindings: Pangkor, Scortechini 1073.

p. 107. **Homalonema trapezifolia**, H.f.

Perak: Gunong Arang Para, Scortechini 606[b].

p. 108. **Homalonema elliptica**, H.f.

Perak: Taiping hills, Scortechini 256[b].

p. 109. **Homalonema Scortechinii**, H.f.

No Scortechini's specimen in Sibpur. Kew is said to have a Scortechini specimen without locality and number.

p. 112. **Schismatoglottis Wallichii**, H.f.

Perak: Maxwell's hill, Scortechini 237[b].

Schismatoglottis Wallichii var. **fasciata**, Ridl.

Selangor: Ulu Bubong, Kunstler 10255.

Schismatoglottis linguiformis, Engler.

Perak: Gunong Ijuk, Scortechini 1197.

p. 113. **Schismatoglottis minor**, H.f.

Perak: Gunong Arang Para, Scortechini 532[b]. Only drawing in Sibpur.

Schismatoglottis brevicuspis, H.f.

Perak: Gunong Arang Para, Scortechini 612[a] and 623[a]; (Drawing only, specimen at Kew). Gunong Batu Puteh, Wray 1206.

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Schismatoglottis Scortechinii, H.f.

Perak: Taiping, Scortechini 148[b]; Gunong Batu Puteh, 3,400 ft., Wray 1201.

p. 120. **Epipremnopsis media**, Engler.

Syn. Anadendrum medium, Schott.

Perak: Selama, Kunstler 3148; Sungei Larut plains, Wray 3062; Relau Tujor, Wray 1771; Larut, Kunstler 3981 and Scortechini 934; Taiping, Scortechini 520; Gunong Batu Puteh, 3,400 ft., Wray 990.

p. 122. **Raphidophora Scortechinii**, H.f.

Perak: Gunong Arang Para, Scortechini 547[b].

Raphidophora Wrayi, H.f.

Perak: Taiping, Scortechini 521[a].

p. 124. **Raphidophora tetrasperma**, H.f.

Perak: Taiping, Scortechini 169[b].

p. 128. **Pothos macrocephalus**, Scort.

Perak: Batu Kurau, 200 ft., Wray 4284; Taiping, Scortechini 116[b].

p. 129. **Pothos Barberianus**, Schott.

Perak: Tupai plains, Wray 2338.

Pothos Barberianus var. **Wallichii**, Ridl.

Syn. Pothos Wallichii, H.f.

Perak: Maxwell's hill, 2,500 ft., Wray 4235; Gunong Arang Para, Scortechini 621[a].

p. 130. **Pothos lancifolius**, H.f.

Perak: Gunong Arang Para, Scortechini 576[b].

p. 131. **Pothos Kingii**, H.f.

Perak: Waterfall hill, Taiping, 300 ft., Wray 3277; Bruas river, Scortechini 1450.

p. 163. **Fuirena glomerata**, Lam.

Perak: Larut, in swampy places or running streams, Kunstler 2451.

p. 171. **Thoracostachyum bancanum**, Kurz.

Perak: Unlocalized, Wray 3107.

p. 183. **Carex Clarkeana**, Kukenthal.

Perak: Unlocalized, Wray 4104.

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p. 195. **Pogonatherum saccharoideum**, Beauv.
Perak: Upper Perak, 300 ft., Wray 3447.

p. 235. **Setaria plicata**, Cooke.
Syn. Panicum plicatum, Lamk.
Perak: Waterfall hill, Taiping, Wray 3274.
Rhio: Gunong Bintang, Kunstler 247.

p. 303. **Semecarpus Prainii**, King.
Perak: On Gunong Bubu at 500–800 ft., Kunstler 7442.

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PROCEEDINGS OF THE ANNUAL MEETING, 1931.

The Annual Meeting of the Asiatic Society of Bengal was held on Monday, the 2nd February, 1931, at 5-30 P.M.

PRESENT :

HIS EXCELLENCY COLONEL THE RIGHT HON'BLE SIR FRANCIS STANLEY JACKSON, P.C., G.C.I.E., Governor of Bengal, Patron.

LT.-COL. R. B. SEYMOUR SEWELL, M.A., M.R.C.S., L.R.C.P., Sc.D. (Cantab.), F.L.S., F.Z.S., I.M.S., F.A.S.B., President, in the Chair.

Members :

Agharkar, Dr. S. P.
Asadullah, Mr. K. M.
Bake, Mr. A. A.
Barwell, Lt.-Col. N. F.
Bentley, Dr. C. A.
Bhattacharyya, Mr. B.
Bose, Mr. M. M.
Brahmachari, Dr. U. N.
Brahmachary, Rai Bahadur S. C.
Brown, Mr. Percy
Chakladar, Mr. H. C.
Chakravarti, Mr. Nilmani
Chaudhuri, Dr. J.
Chatterjee, Mr. P. P.
Chatterjee, Mr. S. C.
Chopra, Dr. B. N.
Coyajee, Sir J. C.
Das, Mr. P. K.
Das, Mr. A. N.
De, Mr. K. C.
Doxey, Mr. F.
Dunn, Dr. J. A.
Fawcus, Mr. L. R.
Fermor, Dr. L. L.
Fleming, Mr. Andrew
Ghose, The Hon'ble Mr. Justice C. C., Kt.
Ghose, Mr. T. P.
Ghosh, The Hon'ble Mr. B. B.
Ghosh, Mr. P. N.
Ghoshal, Dr. U. N.
Goil, Lt.-Col. D. P.
Haq, Mr. M. Mahfuz-ul
Hawes, Mr. G. L.
Hobbs, Mr. H.
Hubert, Mr. Otto
Insch, Mr. James
Jardine, Dr. Alexander
Jenkins, Dr. W. A.
Kanjilal, Mr. M. N.
Khambata, Dr. R. B.
Knowles, Lt.-Col. R.
Law, Dr. Satya Churn
Mahtap, Maharaj-Kumar Uday Chand, of Burdwan.
Mahindra, Mr. K. C.
Mallik, Mr. S. N.
Mallya, Major, B. G.
Manen, Mr. Johan van
Mitter, The Hon'ble Mr. Justice D. N.
Mitter, Mr. K. K.
Modi, Mr. J. R. K.
Mookerjee, Sir R. N.
Rao, Dr. H. Srinivasa
Rao, Rao Bahadur M. V.
Ray, Mr. J. M.
Sadiq, Hakim S. M.
Senior-White, Dr. R.
Shastri, MM. H. P.
Stagg, Lt.-Col. M.
Stapleton, Mr. H. E.
Suhrawardy, Dr. A.
Suhrawardy, The Hon'ble Mr. Justice Z. R. Z., Kt.
Ukil, Dr. A. C.
Wadia, Dr. D. N.
Watling, Mr. R. G.
Young, The Rev. A. W.

and others.

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Visitors :

Banerjee, Mr. J. N.
Banerjee, Mr. J. R.
Basu, Mr. Jatindra Nath
Bhattacharyya, Mr. Bhabatosh
Bhattacharyya, Mr. N.
Benwell, Mr. N.
Blandy, Mr. E. N.
Boven, Mr. Van
Briscoe, Miss
Burnett, Mr. T. S.
Chambers, Mr. R. M.
Costello, The Hon'ble Mr. Justice L. W. J.
Costello, Mrs.
De, Mrs. K. C.
Dhondup, Mr. T.
Dorjee, Mr. T.
Doxey, Mr. M. E.
Fenton, Mr. J.
Fermor, Miss
Fraser, Mr. Ian
Fraser, Lt.-Col. W. A. K.
Ganguli, Mrs. N.
Ganguli, Mr. T. N.
Georgiadi, Mr. A. G.
Ghose, The Hon'ble Mr. Justice S. K.
Ghose, Mr. N. C.
Gregory, Miss E.
Gregory, Mr. E.
Grice, Rev. A. C.
Grice, Mrs.
Gupta, Mr. B. N.
Hessling, Mrs.
Hikmet, H. E. Yussuf, Ambassadeur de Turquie a Kabul.
Iyer, Rao Bahadur L. K. A.
Jack, The Hon'ble Mr. Justice R. E.
Jackson, Mrs. P. S.
Jardine, Mrs.
Knight, Rev. P.
Leo, Mr. C. F.
Leo, Mrs.
Lindsay, Sir D'Arcy
Lvovsky, Mr. Z.
MacDonald, Rev. D.
Mahindra, Mr. P. C.
Mehra, Mr. S. C.
Moore, Mr. J. Percy
Moot, Mr. Th. J.
Moot, Mrs.
Morgan, Mr. C.
Mukherjee, Mr. G. L.
Mukherjee, Mr. P. V.
Pakenham-Walsh, Rt. Rev. H.
Parija, Mr. P. K.
Paul, Mr. K. S.
Philpot, Mr. H. C. V.
Rahman, Mr. S. K.
Ramsay, Dr. G. C.
Ramsay, Mrs.
Rao, Mr. G. N.
Reid, Dr. David.
Rustomji, Mr. M. C. H.
Sachse, Mr. F. M.
Sadhu, Rai Bahadur T. N.
Sarkar, Sir J. N.
Sawday, Mr. S. K.
Scarpa, Dr. G.
Scheffer, Mr. N. J.
Sclater, Mr. C.
Sewell, Mrs.
Singh-Roy, Hon'ble Mr. B. P.
Sukul, Mr. S. N.
Tshering, Mr. M.
Watling, Mrs. R. G.
Wauchope, Major R. S.

and many others.

The President ordered the distribution of the voting papers for the election of Officers and Members of Council for 1931, as well as the voting papers for the election of Ordinary Fellows proposed by Council, and appointed Messrs. Andrew Fleming and H. Hobbs to be Scrutineers.

The President also ordered the distribution of copies of the Annual Report for 1930, and called on the General Secretary to make a few remarks upon it.

The Annual Report was then presented (See page xxxvi).

At 5-55 P.M., the President vacated the Chair and invited Sir Rajendra Nath Mookerjee, K.C.I.E., K.C.V.O., to occupy it during his absence from the room.

The President, the Treasurer, and the General Secretary then left the meeting room to receive His Excellency Colonel the Right Hon'ble Sir Francis Stanley Jackson, Governor of Bengal, Patron of the Society, at the entrance of the building.

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On the arrival of the Patron at 6 P.M., the President introduced the Council to him and thereupon addressed to him the following words of welcome :—

'In the name of the Asiatic Society of Bengal, I bid your Excellency a cordial welcome in our midst, and give expression to our sense of great satisfaction that we have the privilege of your presence this evening. Affairs of state prevented your Excellency's attendance in our previous Annual Meeting. We rejoice that you are with us this time, and wish to assure you of our respect for your high office and our regards for your person.

Once more, Your Excellency, our heartiest welcome. I would now request Your Excellency to do us the honour of taking the Chair.'

After his installation in the Chair, the Patron called on the retiring President to read his annual address.

The retiring President then addressed the meeting. (See page ix.)

The retiring President then called upon the Scrutineers to report and announced the results of the Council election. (See page xxvii.)

The President for 1931 then thanked the Society for his re-election as follows :—

'Ladies and Gentlemen, I have to thank you most heartily for the honour you have done me by re-electing me your President for the ensuing year.

I will add no words other than those necessary to say that it will be my strenuous endeavour, during this new year, to serve the Society so that its usefulness, its renown and its powers may grow, and so that the cause of learning in this land and beyond its borders may be truly promoted.'

The President for 1931 then called upon the Patron, His Excellency the Governor of Bengal, to address the meeting.

The Patron then addressed the meeting. (See page xxiv.)

After the reading of the Patron's address, the President for 1931 proposed a vote of thanks to the Patron.

The vote of thanks having been adopted by acclamation, the President made the following announcements :—

'I have now the great pleasure to announce that, having heard the report of the scrutineers, I declare the following Ordinary Members :

Dr. S. Krishnaswami Aiyangar,
Lt.-Col. R. N. Chopra, and
Mr. R. B. Whitehead

duly elected as Ordinary Fellows of the Asiatic Society of Bengal.'

'I have next to announce that the Trustees of the Elliott Prize report that no paper has been submitted in competition

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for the prize for the year 1930, which has been for the subject of Physics.

A prize will be offered for 1931, and the subject will be for research in Geology and Biology (including Pathology and Physiology) regarding which a detailed announcement has been published in the *Calcutta Gazette* during the last month.'

'My next announcement regards the Sir William Jones Memorial Medal. The Medal for 1930 is awarded to Dr. Felix H. D'Herelle, Professor of Bacteriology, Yale University, U.S.A., for his research on Indian Medicine.'

The Patron then called upon the President to receive the Medal on behalf of Dr. D'Herelle in the latter's absence, and requested him to forward the medal to the recipient, together with his and the Society's best congratulations.

The President then made the following announcement regarding the Annandale Memorial Medal :—

'The Annandale Memorial Medal for 1930 is awarded to Dr. Charles Gabriel Seligman, Professor of Ethnology, University of London, for his contributions to the study of Anthropology in Asia.'

The Patron then called upon the President to receive the medal on behalf of Dr. Seligman in the latter's absence, and requested him to forward the medal to the recipient, together with his and the Society's best congratulations.

After the bestowal of the Medals, the President declared the Annual Meeting to be dissolved and invited the non-members present to examine a collection of exhibits at the other side of the hall, and the Members present to re-assemble around the table for an Ordinary Monthly Meeting for the election of members and the transaction of business.

After this final announcement, the President conducted the Patron for an examination of the exhibits. (For a descriptive list of the exhibits, see page xxviii.)

At 7 P.M., the Patron left the meeting, conducted by the President, after which an Ordinary Monthly Meeting was held for the transaction of business by Members, whilst the visitors inspected the exhibits.

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ANNUAL ADDRESS, 1930-31.

YOUR EXCELLENCY, LADIES, AND GENTLEMEN,

Before I commence my Presidential Address to you there are one or two matters to which I should like to direct your attention.

Our General Secretary in the Annual Report for the year has called attention to the fact that the total membership of the Society shows during the past year a distinct though possibly not a great falling off and he attributes it to a reaction to the condition of universal economic depression that has existed during the year. While this may to some extent be true, an examination of the figures shows that this decrease is in the main due to two causes : (1) a decrease in the number of new admissions to the Society, and (2) the resignation of a number of members of recent standing. Out of a total of 44 resignations, 40 are those of members of less than 7 years standing.

One has a suspicion that both these causes have one fundamental matter in common and that is that new or prospective members think that they do not get their money's worth in return for their subscription. Another feature of our membership list is the comparatively small number of members who live outside Calcutta, namely only 37% of those resident in India as opposed to 63% who live in this city. The Asiatic Society of Bengal naturally has a far greater attraction and appeal to those who reside locally and are therefore able to attend the regular monthly meetings ; but for others the attraction of the society and its value to its members must largely be limited to the interest and extent of our publications and the facilities that the Library affords. It behoves us, therefore, to pay special attention to these two matters and in the forthcoming year I hope that it will be possible to bring our Journal more up-to-date and to complete the new catalogue of the Library so that Members may be able to acquaint themselves with its resources.

In this connection I may, perhaps, be permitted to refer to the Library Permanent Endowment Fund and I would direct the attention of Members and other well-wishers of the Society to the remarks in the Annual Report regarding the inadequacy of the present annual allotment for the Library of the sum of Rs. 4,000, which is all that the Society can afford, and out of which in the forthcoming year Rs. 1,200 is required for binding, leaving only Rs. 2,800 for the purchase of new publications. There is an urgent necessity for a substantial endowment of our Library ; the Library Permanent Endowment Fund was started in 1927 and up to the present time some

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Rs. 8,000 have been subscribed, of which 54% has been donated by Members of Council, and only 32% by all the other Ordinary Members of the Society. I take this opportunity to appeal to all Members of the Society to make an effort and contribute to this endowment fund, no matter how small the donation may be.

The Society this year mourns the loss of three of our very old members :—

W. H. Miles, R. D. Mehta (who at one time was our Treasurer), and Lt.-Col. D. C. Phillot, who was also one of our Fellows. All three had been Members for over forty years.

I would also like on behalf of the Society to tender our congratulations to our popular General Secretary on being made an Hon. C.I.E., and to Sir C. V. Raman on being awarded the Hughes Medal by the Royal Society of London and the Nobel Prize for Physics.

The Problem of Evolution II

The Trend of Evolution under Natural Conditions

The theory of evolution is based on one proved fact and one assumption, namely (1) that living matter exhibits definite variations, whether these be of the nature of small and gradual alterations or of larger and more obvious changes that may be inherited and are termed mutations; and (2) that nature has exercised and presumably still exercises a selective choice among living organisms as a result of changing conditions of time and space combined with competition. I do not propose to discuss here the causes of these variations and mutations but it seems to me that such departures from the normal must ultimately be the result of external conditions that act on the organism, and, further, we must bear in mind that the primary cause may have acted on the immature or larval stage of an animal and not on the adult, and that the effect may not become visible until the next or possibly even the 2nd generation. Garstang[1] claims as examples of this early action that the Order Gastropoda in the Mollusca originated by a change, to wit, the torsion of the body, that first arose in the free-swimming larval stage of development; and that the differentiation of such genera as *Emarginula* and *Fissurella* were equally brought about by a larval mutation, these changes being handed on to the adult. Willey[2] has also emphasised the view that "Larvæ are the vehicles of the future rather than the relics of the past". In any case varieties or mutations

[1] Garstang, W., 1928. "Origin and Evolution of Larval forms." British Association, Section D. Zoology. Glasgow.

[2] Willey, A., 1911. "Convergence in Evolution," p. 41. London.

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arise from the parent stock and according to the Darwinian theory their survival will depend on the value or otherwise of the alteration; if the variation is an advantage to the species then it will be preserved. Darwin[1] himself remarks, "It is, as I can see now, probable that all organic beings, including man, possess peculiarities of structure, which neither are now, nor were formerly, of any service to them, and which, therefore, are of no physiological importance. We know not what produces the numberless slight differences between the individuals of each species.....; but each peculiarity must have had its efficient cause. If these causes, whatever they may be, were to act more uniformly and energetically during a lengthened period, the result would probably be not a mere slight individual difference but a well-marked and constant modification though one of no physiological importance." Twice in thirteen lines Darwin asserts that these changes may be of no physiological importance; but can any change, accompanied as it must be by other changes in the complete organism, be of no importance, physiologically or otherwise? The advocates of the Darwinian theory of Evolution and those of the Mutation theory appear at first sight to be in the main in complete opposition in their views regarding the effect of environment on the race. According to Darwin, animals are always tending to vary and if the variation is beneficial then external surroundings will by selection perpetuate and even intensify such modification, till we ultimately get a new species established. The Mutationists, however, hold the view that the change of structure or function is inherent in the egg and the effect of environment on a favourable mutation will be to fix it and eliminate all those other forms that tend to vary from the mean. These views regarding the effect of the surroundings on the individual are, however, not so diametrically opposed as at first sight they appear to be; but neither view formulates any ultimate cause for the variation or mutation, or, in other words for the actual evolution of new forms.

Evolution, as I understand it, is the response of the living organism to the outside influences that constitute its environment and this response may be in one of two directions. In the early stages of evolution or in the early stages of development in those animals in which evolution has already advanced to a considerable degree and which we in consequence term higher animals, the actual external conditions themselves appear to have acted upon the organism, producing changes in the genital cells and thus giving rise to forms that differed from their parents and, if those influences affected the chromosomes of the nucleus of the germ cells, the change in bodily form was inherited and

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[1] Darwin, Charles, "Descent of Man," pp. 61, 62. 2nd Edition, 1896.

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we get what is termed a mutation. Bather [1] in his address to the Geological Society in 1928 asks "Why do mutants so often assume the same characters as the adaptive modification? Does the influence that produces the modification also induce a change in the germ, and, if so, why is that change in the same direction as the modification?" He suggests that there is some physico-chemical factor in the body that will be found to be capable of producing the same effect on the germ cells as on the body itself; but without actually adopting this view, though it is, I think, extremely probable, we must not overlook the fact that while changed surroundings *may* produce mutations in a number of different directions, it is only those that are of direct utility to the animal or, in other words, those that approximate to the modification that will be able to survive and thus become known to us either by their presence in animals in the living state, or by their presence as fossils in the various strata in sufficiently large numbers to have ensured their subsequent discovery and thus to afford the proof that at one time they did survive the changes in their surroundings. Whatever the actual process may be, there can be but little doubt that there is a close connection between the surroundings and the bodily characters. As Baker [2] remarks, "Some Zoologists—especially Ecologists—may affirm that the environment, in directing evolution, does in fact cause the change, as for example, when a normal river or creek species is forced to inhabit a lake, and in a sense this may be true, the changed environment *compelling* the organism to change its structure so that it may be in harmony with the changed conditions." My colleague, Dr. Hora [3], has made a special study of the similarity of structure in those animals that inhabit Torrential streams, and the same close resemblance can be seen in those animals that have respectively adopted an Arboreal existence, a burrowing form of life, or an aquatic habitat, etc. A comparatively short change of environment may be sufficient to produce a similar change in different animals. During the last year Le Souef [4] has given a very interesting account of the changes that have taken place during the last 60 years in certain species of Wallaby that were introduced from Australia into Kawan Island, near Auckland, New Zea-

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[1] Bather, F. A., 1928. "The Fossil and its Environment." Annual Address to the Geological Society, London.

[2] Baker, F. C., 1928. "Influence of a changed environment in the formation of new species and varieties." *Ecology*, Vol. IX, No. 3, p. 271.

[3] Hora, S. L., 1930. "Ecology, Bionomics and Evolution of the Torrential fauna, with special reference to the organs of attachment." *Phil. Trans. Royal Soc. London.* Series. B. Vol. 218, pp. 171-282.

[4] Le Souef, 1930. *Australian Zoologist*, Vol. VI, p. 111. (I have not been able to refer to this paper. R.B.S.S.)

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land; four species were introduced and in three of these exactly the same evolutionary changes have now taken place; the fur has become longer and more silky, the colouration is darker and the markings have become more pronounced. The fourth species is, as yet, unchanged. Exactly similar changes have occurred in Opossums that were introduced into New Zealand; here also the fur is longer, more silky and less dense and these changes are so marked that New Zealand skins can be distinguished among thousands of others that are offered for sale. We have here a very clear instance of identical changes being caused in certain characters of species belonging to different Sub-orders of the Marsupialia as a result of introduction into the same conditions of life.

In the present state of our knowledge it is not, however, always possible to correlate similar variations in different species with similar changes in the environment; as an example I may cite the change from a distome form to a monostome in some of the larvæ of the Digenetic Trematodes.[1] In every case these larval forms pass through a stage, known as the Cercaria, in which they leave their first host, a Mollusc, and take to a free-swimming life. So far as one can judge, there can be but little difference in their surroundings and yet in five or six instances there has occurred, quite independently, a suppression of the posterior or ventral sucker. A somewhat similar phenomenon, met with in certain other groups of the animal kingdom, is the progressive variation, or the waxing and waning of what Metcalfe[2] terms "trends". These trends may arise in certain families and are not, apparently, directly connected with the external surroundings though their inception must, I think, have some ultimate external cause. The examples that Metcalfe quotes are certain planktonic organisms or intestinal parasites, both of which live under conditions as stable as one is likely to find anywhere in nature. These trends are tendencies to vary in a particular direction and may possibly be the result of a physiological mutation, but even so they appear to have periodic fluctuations, rising to a maximum and then waning again; and they may for a time even be suppressed altogether but only to appear again later. Such trends act and behave like other characters of the body; and, like many other characters, they tend to appear in subsequent stages of evolution at an ever earlier stage of development and in

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[1] Sewell, R. B. S., 1930. "The Evolution of the Excretory System in certain groups of the Furcocercous Cercariae." *Rec. Ind. Mus.*, Vol. XXXII, p. 357.

[2] Metcalf, M. M., 1928. Trends in Evolution: A discussion of data bearing upon "Orthogenesis". *Journ. of Morphology and Physiology*, Vol. XLV, p. 1.

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some instances may, as a result of this, actually become harmful to the race.

Within recent years it has been shown that changes in environment may be accompanied by and in all probability themselves produce physiological alterations in the body without causing any corresponding morphological change, except possibly, one of bodily size; in such cases even a detailed and careful examination fails to reveal any difference in the structure of the various parts of the organism, even the proportional sizes of the various parts remaining the same. We thus get the formation of physiological or, as they have been termed, Biological races within the limits of the same single morphological species. Such races may be induced by a variety of causes, such, for instance, as :—

(1) changes in the external temperature conditions.
Individuals of a species may become acclimatised to either high or to low temperatures and yet be unable to stand any sudden change. In such cases individuals adapted to higher temperatures are unable to inter-breed with those living at a lower temperature. Exactly similar changes may be induced by

(2) changes in the pH concentration of the surrounding medium, or,

(3) changes in Salinity.

Again, we may get changes in the physiological conditions of the animal itself, as for instance—

(4) differences in the time of ripening of the genital organs, or differences in habits during the breeding season, or,

(5) in the nature of the food and the resulting differences in the vitamine supply that may cause a difference in the bodily size.

Any of the above causes may prevent the fertilisation of the females of one race by the males of another, and we should thus get a physiological isolation, the effect of which will be quite comparable, so far as the production of new species is concerned, to that produced by spatial isolation.

There is also a growing mass of evidence that, quite apart from any possible effect that it may have on the germ cells, an alteration in the environment, using this term in its widest sense, may produce an effect on the body as a whole and also on certain groups of cells or organs within the body and may thus affect the future structural and physiological condition of the organism. In this connection it is interesting to note the very small limits of the physical conditions within which life is possible. The known range of

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the thermometer extends from −273° C to the upper extreme that lies far beyond the condition known as white heat, approximately 2000° C; yet living organisms can only exist between the ranges of 0° and 100° C. As Coleman [1] has pointed out, liquid water is essential for the continuance of life. In some of the lower organisms the individual can withstand being frozen for a short time, and in the higher or warm-blooded animals their bodies can for varying periods withstand an exposure below 0° C, but only because the body retains its own temperature and thus prevents the water in the system from freezing; water as a gas and water as a solid will not serve the purpose of life, it must be in a liquid condition. Doubtless changes in the external conditions can be met by living organisms in a variety of ways and in my Presidential address to the Indian Science Congress last month I put forward evidence to show that either external conditions, using the term in its widest sense, or the internal conditions of the parent may so affect the developing animal as to cause the appearance of new characters. Many of these changes are small and of but little concern to the animal; yet, by the summation of such characters brought about by natural selection, we may ultimately produce a very marked change. Sewertzoff [2] has classified the evolutionary changes that occur in the animal kingdom into four groups:

(1) Aromorphoses, or changes of both the structure and function of organs or progressive evolution;
(2) Idio-adaptations, or specialised adaptations to changing surroundings;
(3) Coenogenesis or embryonal adaptations; and
(4) Degeneration.

These two latter groups of changes are of a somewhat specialised kind and I do not propose to consider them further; the other two seem to me to differ from each other in degree rather than in kind. In both cases they are the responses of the body to altered environment and in the case of the Aromorphoses, that led to the origin of the great groups of the animal kingdom, occurred for the most part, if not entirely, at those periods of the world's history when the earth itself was undergoing profound changes in its physical condition. There is among some zoologists and especially among those who have attempted to study the Psychology of the lower animals a growing tendency to regard the animal's own initiative as one of the most important factors in the evolution of the race, though

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[1] Coleman, A. P., 1926. "Ice Ages. Recent and Ancient." New York.

[2] Sewertzoff, H. N., 1929. "Directions of Evolution." *Acta Zoologica*, Vol. X, p. 59.

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some appear to me to press the argument too far. One cannot but admit that a change of function in an organ, such as Sewertzoff postulates in the 'aromorphoses', must in many cases have been due to a large extent to the animal's own activities. The change from a simple branchial skeleton supporting the gill arches in the primitive chordate to a definite mechanism for capturing prey, with its upper and lower jaws, must very largely have depended on the efforts of the animal and its use of the anterior arches as a prehensile mechanism; again, in the torrent-inhabiting forms, the development of a flattened body or prehensile claws, that enable the animal to lie close against the surface of, or to cling to a rock and thus allow the rush of water to pass harmlessly by, could only have possessed survival value if the animal had adopted a rock-frequenting habit, and it is possible that in a dim and smaller degree the same initiative was active in the production of new forms among the lowest animals.

Bidder has recently pointed out that a small change in the animal's structure or physiology, that under normal conditions may be neither useful nor harmful, may, during the occurrence of a "cataclasm", become the deciding factor whether the possessor shall survive or not; and if these cataclasms are repeated, even if only at intervals of such immense length as 50,000 years, they will have a great effect on the preservation and in determining the character of the surviving fauna. Such cataclasms or rather cataclasmic periods seem to have occurred in the earth's history on five different occasions, in most cases associated with a definite Glacial Period, and at or closely following each successive cataclasmic period there was a considerable development and evolution of animal forms. In the accompanying chart I have attempted to show graphically the time in the history of the earth at which the great groups of the animal kingdom made their appearance and you will at once notice how early many of these great groups made their appearance. The figure is based on a chart recently published by Matthew[1], showing the probable Geological period in which each of the main phyla arose, modified in places in accordance with the views of Chamberlin and Salisbury[2], while on the left hand side, the wavy line, showing the periods of instability of the earth's crust is taken from Dudley-Stamp[3]. Life probably began on the earth at some stage of the Eozoic or possibly even in the Azoic Era, though up to the present time the earliest fossils that have been discovered are from the Proterozoic Era. In the Huronian period of the Proterozoic Era we get

[1] Matthew, W. D., 1930. "The Pattern of Evolution". *Scientific American*, Sept., p. 192.

[2] Chamberlin and Salisbury, "Geology; Earth History." London.

[3] Stamp, L. Dudley, 1923. "An Introduction to Stratigraphy" Fig. 4, p 19. London.

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the first great period of instability and glaciation, and immediately following this we find that by the end of the Proterozoic period evolution had advanced so far that the Protozoa, Sponges, Coelenterates, Echinoids, Annelid worms, Crustacea, Pteropods, and Molluscoides had all definitely made their appearance. At the close of the Proterozoic Era in the Precambrian period there was a second Glacial Epoch and immediately following this in the Cambrian we get evidence of the existence of Gastropod and Lammellibranch Molluscs, while in the periods that follow we find the existence of Cephalopods, Chordata, and Vertebrates in the form of Fish; while at the close of the Silurian period there is evidence of another period of instability of the earth's crust, though in this case unaccompanied by any glacial epoch, and we now find the remains of Crinoids, Reef-forming Corals, Arachnids (Scorpions, Spiders) and in the Devonian Period of Insecta and Amphibia. Following on the Carboniferous (Pennsylvanian) Period of the Palaeozoic came the third great glacial epoch, again accompanied by a period of instability of the earth's crust and this is followed in the Permian by the appearance of Reptiles, while the Triassic and Jurassic Periods of the Mesozoic saw the commencement of the Birds and Mammals. From this stage there has been no new appearance of Classes or Orders and for the most part evolution has been limited to the appearance of new genera or species. The effects on the animal population of the globe of this Carboniferous glacial epoch are summed up by Coleman[1] in the following words: "The Palaeozoic, the time of ancient life, ends with the Permian, when most of the formerly dominant types of living beings disappear or lose their importance, leaving the way open for new types to take their place. This is true of land and sea and air. It was too serious an ordeal for many creatures adjusted to warm waters, and we find that Trilobities vanish, Corals and Brachiopods diminish greatly and few of the many primitive sharks of the Palaeozoic seas survive. The antiquated Ganoid fish with bony scales or plates almost disappear. In their place come the more modern and adaptable molluscs, Ammonites, bony fish, and great marine reptiles. On the land the giant spore-bearing plants, horse-tails, ground pines and tree ferns lose their supremacy and give place to Conifers and Cycads, the forerunners of Mesozoic forests. Among the Cryptogamic trees, there were many strange insects, including forms like dragon-flies with a two-foot spread of wings. The climax in size of the lower forms of plant and animal life, the spore plants and the insects, passed with the long winter of the Permocarboniferous Ice Age, leaving the way clear

[1] Coleman, A. P., 1926. "Ice Ages. Recent and ancient." New York.

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for the flowering plants and flying vertebrates, such as the Pterodactyls and the birds with teeth of the Mesozoic. On the land the small reptiles which survived the cold rapidly multiplied and expanded into the dinosaurs, which ruled the renovated continents after the Ice Age disappeared."

Matthew[1] remarks "the period was a most important and critical one in the evolution of land life for it witnessed the first great expansion of land vertebrates and the origin, probably, of mammals, birds, and the principal orders of reptiles, including dinosaurs."

The huge dinosaurs were, again, in their turn, destroyed by or, at any rate, at about the time of the Glacial Epoch in Eocene times and finally it was the Glacial Epoch in Pleistocene times that gave Man his opportunity and led to the evolution of *Homo sapiens* from some primitive ancestor, such as *Homo heidelbergensis* or *Homo neanderthalensis*.

I would remind you that the date assigned to the first appearance of these great groups of the animal kingdom is dependent on the discovery of fossil forms in the various strata and it may be that future researches by geologists will throw the origin of some of these groups even further back. All that we can definitely state at the present time is that each of the groups are known to have been in existence at the period indicated. In this connection I may refer again to the recent publication by Matthew[2] who believes that nearly all the great groups originated at about the same time in the Precambrian era; Austin Clark[3] has recently suggested that the main evolutionary divisions took place at an even earlier stage. He postulates that "from the single cell life, at its very first beginnings, developed simultaneously and at once in every possible direction. All of the phyla or major groups seems to be a simultaneous development. From each one of them a separate evolutionary tree arose, growing upwards through the ages." He maintains that so far back as Cambrian Times, at least, the major groups of animals bore the same relationships to each other that they do to-day and moreover that this Cambrian era is much nearer to the present epoch than it was to the far distant time when life on earth began. Dr. Hans Przibram[4] throws the great changes in evolution even further back, and suggests that every species of Metazoan has been

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[1] Matthew, W. D., 1923. "Recent Progress and Trends in Vertebrate Palaeontology." *Bull. Geol. Soc. Amer.*, Vol. XXXIV, p. 404.

[2] Matthew, W. D., 1923. "Recent Progress and Trends in Vertebrate Palaeontology." *Bull. Geol. Soc. Amer.*, Vol. XXXIV, p. 404.

[3] Austin H. Clark, 1930. "Zoogenesis." *Scientific American*, Aug., p. 104.

[4] Przibram, H., *Rev. Gen. Sci.*, Vol. XI, No. 10, p. 293. (I have not been able to refer to this paper. R. B. S. S.)

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derived, independently of all others, from a distinct species of Protozoan. Whichever of these views be right there seems but little doubt that each successive Glacial Epoch or period of instability of the earth's crust has been responsible for less and less advance in the evolutionary scale. No great group has appeared since the Jurassic and Triassic Epochs, when the Mammals and Birds first arose from the Reptiles, and by attaining to the condition of Homoiothermy or warm-bloodedness were able to dominate all the other groups of the animal kingdom.

As Langdon Brown[1] has recently pointed out, "the most striking thing about protoplasm is its incessant urge to assert itself as strongly as its environment will permit. This is the real struggle for existence..... The whole story of the multicellular organisms is one of mutual adjustments between the different tissues, each trying to do the best for itself within the limits of those adjustments. And, similarly, the individual composed of such tissues struggles to achieve the best it can within its environment, or to change into a more favourable one. The dipnoid fish, gasping for breath on the mud-flats and struggling with its spiky fins to reach the land, was, no doubt, actuated by the need to escape from the competition of life in the sea towards the abundant food-supply on the land. From that successful struggle all the land Vertebrates and ultimately man himself arose." A study of the changes that have been carried out in this process of evolution indicates that protoplasm and the animal can react in one of two ways; the first of these ways, and probably at the outset of evolution the only way, was for the animal to react to and with its surroundings. In the very early stages of life on the earth the temperature of living organisms was the same or nearly the same as that of the surrounding medium; similarly the fluids of the body originally possessed the same specific gravity as that of the surrounding fluid, and if, as we believe, life originated in the sea, these early animals were exposed to an almost definite and constant salinity and to only slight changes of temperature and gas content, while owing to the permeability of the outer wall or ectoderm any changes in the surrounding medium were rapidly compensated by changes in the animal itself. But as evolution progressed, we find that this adaptability was given up and the animal began to react *against* its environment or perhaps one should say to insulate itself against environmental changes. Attention to this type of evolutionary process has been drawn recently by Wardlaw[2]. As he points out, if the environment

[1] Langdon Brown, W., 1930. "On Clinical Psychology." *St. Bartholomew's Hospital Journal*, Vol. XXXVII, No. 10.

[2] Wardlaw, H. S. Halero, 1930. "Some Aspects of the Adaptation of Living Organisms to their Environment." Presidential Address, *Proc. Linn. Soc. N.S. Wales*, Vol. LV, P. I, p. viii.

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becomes too dry, the animal will surround itself with an impermeable wall and will encyst. At a later stage with the formation of a body, the body fluids at first possessed the salinity of the medium in which the animal lived, namely, that of the sea in which they originated, and doubtless fluctuated in accordance with the slight variations in the external conditions, but with the development of an ectoderm, that prevented the diffusion of the body salts into the surrounding medium, any subsequent change in the condition of the outer medium was without effect. The osmotic pressure of the body fluids such as the blood is in lower animals the same or very nearly the same as that of the surrounding medium. In Elasmobranchs the osmotic pressure of the two fluids is practically identical. In the Teleosts we get, however, the commencement of a controlling mechanism, for in the Plaice the osmotic pressure of the sea-water may vary 74 per cent. while the osmotic pressure of the blood varies only by 20 per cent., whereas in the cod the osmotic pressure of the sea may vary in different localities by 69 per cent. but that of the cod's blood only by 3 per cent. One result of this stabilisation of the characters of the body fluids was to render it possible for marine animals to migrate into fresh water. Still later came the power of preventing the outer surface from drying up and the ability to absorb oxygen from the air, and in consequence animals were able to leave a watery medium and take to dry land.

This land migration was not limited to any one group of the animal kingdom. It has taken place independently in at least three of the great groups or Phyla. In the Mollusca the Pelecypoda have been able to invade fresh water, but up to the present time have not succeeded in populating the land. The Gastropoda, on the other hand, have been able to do so, and we now find numerous representatives that pass their whole existence out of water and are able to protect themselves in time of drought by closing the opening of their shell. The Cephalopoda which are regarded as being the most highly evolved of the Mollusca, have throughout maintained their marine habitat. Again in the Arthropoda, a number of Crustacea have taken to fresh water and some even to a terrestrial existence, though they still have to return to water for breeding purposes; the second and third great classes, the Insecta and Arachnida, are nearly all terrestrial and breathe air, though here again some have to pass through their early stages in water. It is in the Vertebrata that the greatest and most complete change of habitat has taken place. In the lowest class the fish are still essentially aquatic, though a few have developed accessory respiratory organs that enable them to breathe air. The Amphibia, as their name implies, frequent both a watery and a dry habitat, though here again their early life-stages are passed in water. The Reptiles, Birds, and

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Mammals are essentially land dwellers, though a few have again returned to an aquatic habitat.

Finally we get the stabilisation of the temperature of the body in both the Birds and Mammals, or the condition known as "Homoiothermy"; formerly the body temperature varied with that of the outer air or water but its stabilisation in the warm-blooded animals not only rendered them comparatively impervious to the changes of the outer medium but, being stabilised at a moderately high temperature, enabled them to perform all the functions of the body at a much more rapid rate than could be done in animals whose temperature not only fluctuated but was frequently considerably lowered in conformity with that of the outer air or water. They thus have a distinct advantage over the cold-blooded animals. In this connection it is interesting to note that the mechanism of heat control is not so efficient in the lower mammals, Monotremes and Marsupials, as it is in the higher forms, and is also not so efficient in the young of these higher forms as it is in the adult; in *Echidna* a variation in the temperature[1] of 30°C. results in a change of 10°C. in the body temperature. In some of the higher vertebrates the warm-blooded condition is, however, not permanent, but is replaced by a cold-blooded state of "poikilothermy" during hibernation.

In the highest group of animals the Vertebrates and even in some of the Invertebrates this tendency on the part of the animal to cut itself off from its external surroundings has been carried even further and has been supplemented by various devices that especially protect the individual in the very early stages of its development. In the lowest organisms eggs were and are laid in water and possess only a thin and delicate membrane around them, so that they are directly affected by changes in the external surroundings. Exposure to air would cause their drying up and the consequent death of the embryo, while changes in temperature would alter the rate or character of development. Then came the stage when the eggs were surrounded by a thicker covering, chitinous in some cases or with a lime shell in others. Such a shell prevents evaporation, so that the eggs can now be laid on land and development be expedited by the effect of the sun's rays, while the calcareous shell still further serves to protect the embryo from such influences as ultra-violet rays[2]. Finally, animals tend to become viviparous and development occurs *in utero*, where the embryo is maintained

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[1] Pearse and Hall, 1928. "Homoiothermism", p. 91, New York.

[2] Hinrechs, Marie A., 1927. "Modification of development on the basis of differential susceptibilities to radiation." *Journ. Exper. Zool.*, Vol. XLVII, p. 309.

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in equable surroundings, completely protected from changes in temperature, salinity or other changes in the external conditions, since those of the parent remain constant. These changes, however, did not take place simultaneously with the alteration of the habit of the parent but followed, usually, at a later period, though in some cases it has taken place in animals that still inhabit their old ancestral environment, the sea. In the Elasmobranch fishes, for instance, the eggs are usually enclosed in tough chitinous egg-capsules, and in a few cases the process of intra-uterine gestation has been attained. In the Amphibia, while the lower forms still respire by gills, the higher are able to breathe air when adult, but they nearly all still lay their eggs, surrounded by a thin capsule and enclosed in a gelatinous matrix, in water, though some, such as the Java tree-frog, lay their eggs in a nest made of a rolled leaf. The Reptiles, however, acquired the method of enclosing their eggs in a thick chitinous shell, and were thus able to deposit them on land; and in certain cases the chitin of the shell is still further strengthened by the addition of calcium salts. The Birds enclose their eggs in a shell impregnated with calcium carbonate and have adopted the process of incubation, thus protecting the developing offspring from variations in temperature, and in all these cases, in addition to this provision of a protecting shell, the egg is supplied with a large amount of nutrient material or yolk, that enables the developing young to pass a considerable time within this protection and to reach a comparatively advanced stage of development before it has to become exposed to the varying character of the external surroundings. Finally, the Mammals have evolved the method of intra-uterine gestation, though here again the process was somewhat delayed, for the most primitive mammals, the Monotremata, still lay eggs, while in the Marsupials intra-uterine gestation is extremely short, the young embryos being transferred to the Marsupial pouch. The result of this is that there has throughout been a steadily progressive protection of the developing embryo from its external surroundings, so that environmental changes can no longer reach the embryo at that stage of its existence in which it is most, if not only, susceptible to such influences.

In a similar manner the introduction into the body of any substance is, if the introduction does not prove fatal, immediately counteracted by the production in the body of a substance that can neutralise the effect of the foreign materials; thus the introduction of an acid causes the production of an alkali, a toxin is met by the production of an anti-toxin, etc. In a number of cases, if not in all, the body overdoes the process, so that not only is the toxin neutralised but a superfluity of the anti-toxin is produced so that subsequent poisoning by the

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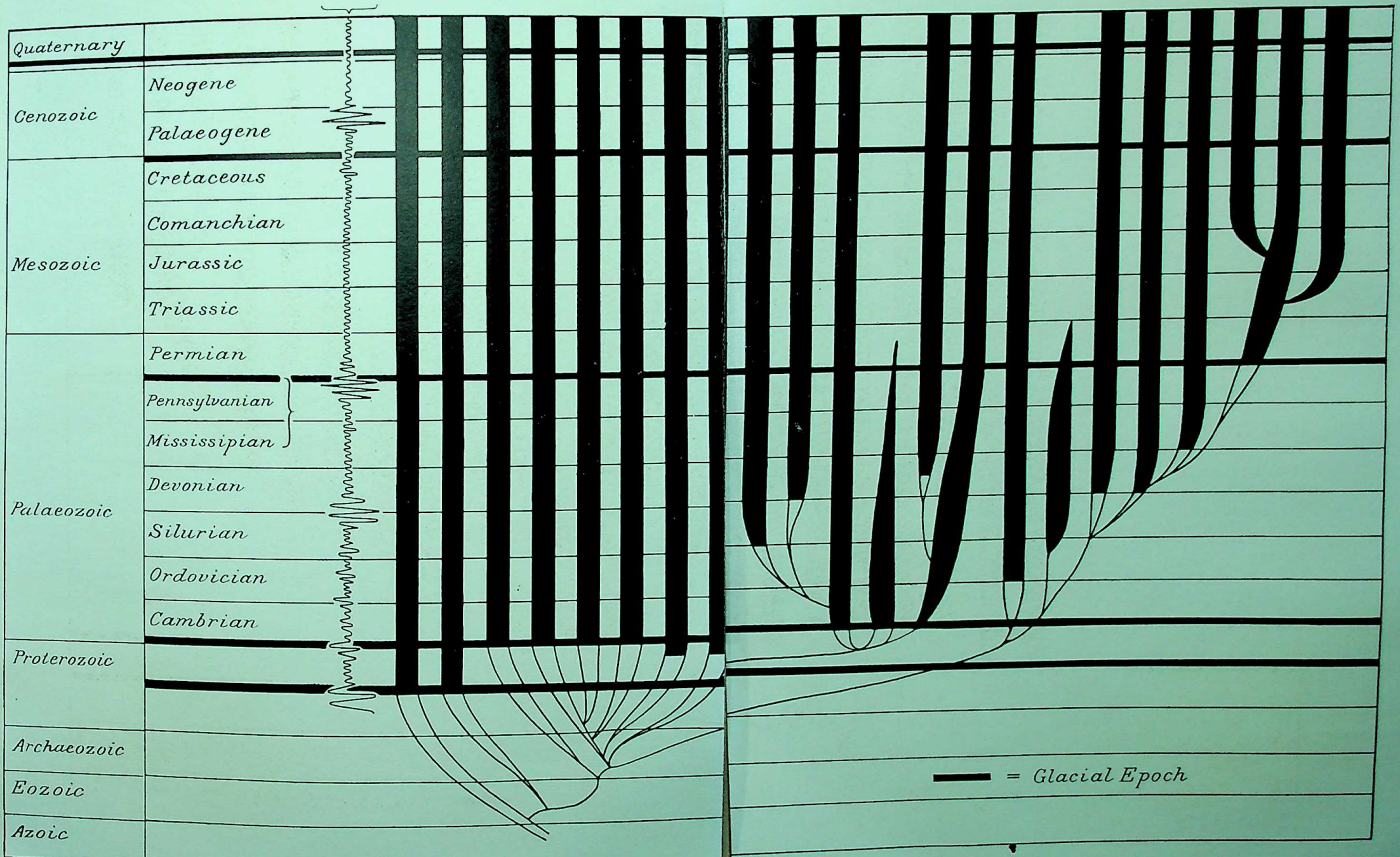

Chart showing the Geological epochs in which the main groups of the animal kingdom originated and the periods of instability of the earth's crust.

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same toxin becomes more difficult or impossible, and this effect appears in some degree to be transmitted to the offspring.

It thus appears that throughout the later stages of evolution the animal has been steadily cutting off both itself and its offspring from its external surroundings and thus has equally throughout his whole life been cutting itself off from just those influences that in times past were responsible for the origin and gradual development of new forms and higher races. Wardlaw[1] concludes his address as follows: "We have in man, then, the most perfect adaptation to environment shown by any form of life. So great is his power of modifying his surroundings, and so rapidly is this power increasing that it would seem that further adaptation of his physical structures has become unnecessary." I would, on the other hand, be inclined to postulate that man has, or in the very near future will have, rendered himself so independent of his environment that this will no longer be able to affect his physical characters and that if there is to be any further evolution, this must be the result of his own mental processes.

R. B. Seymour Sewell.

2*nd February*, 1931.

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[1] Wardlaw, H. S. Halero, 1930. "Some Aspects of the Adaptation of Living Organisms to their Environment." Presidential Address, *Proc. Linn. Soc. N.S. Wales*, Vol. LV, Pt. I, p. viii.

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PATRON'S ADDRESS.

SPEECH BY HIS EXCELLENCY SIR STANLEY JACKSON, GOVERNOR OF BENGAL, AT THE ANNUAL MEETING OF THE ASIATIC SOCIETY OF BENGAL ON THE 2ND FEBRUARY, 1931.

MR. PRESIDENT, LADIES, AND GENTLEMEN,

My first duty is to offer congratulations to the President for his most interesting and profound address which we have heard with much pleasure.

The Annual Report for 1930 tells a tale of undiminished activity and, in the main, continued success which it is a pleasure to read.

We have unfortunately to deplore the inevitable gaps in our membership. Sir Benode Mitter and Mr. Langford James, though comparatively new members of the Society, were old friends to a great number of our body ; while in Mr. R. D. Mehta the Society loses one who had been a member for forty-four years and had held the post of Treasurer. The late Colonel Phillott also had been a member for forty years and a Fellow for twenty. On the other side of the shield our roll of Honorary Fellows has been enriched by the addition of the names of three eminent scholars—Messrs. Robinson of London, Caland of Utrecht, and Jacobi of Bonn. The Society as a whole has been honoured in the recognition accorded by His Majesty the King Emperor to the work of our energetic and popular General Secretary whom I was privileged, by His Majesty's command, to invest with the insignia of an Honorary Companionship of the Order of the Indian Empire during the course of the year. We all feel gratified at this signal recognition of one who has gained our respect by his valuable work in India and our regard by his engaging personality. It is also, I am sure, a matter of sincere pleasure and gratification to the Society of which he is a Fellow that the services to Science of Sir C. Venkata Raman have also received recognition during the past year by the award of the Nobel prize for Physics.

Science and Scholarship are proverbially international and I am glad to see that the intimate relations hitherto subsisting between the Society and the world of scholarship elsewhere have been amply maintained during the year under review.

To the world at large the Society is best known for two things,—its publications and its library. These in fact constitute the main activities of the Society. As to publications,—the Annual Report speaks over 3,000 printed pages being prepared for issue during the year : they relate to all kinds of subjects and cover editions in Sanskrit and in Persian, besides catalogues

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of Oriental manuscripts and the varied contents of the Society's Journals. This constitutes, I think, both for volume and variety, a record of which any learned Society has a right to be proud. The Library also records the completion of its seven years' binding programme and has in that period carried out the binding of over twelve thousand volumes of books and manuscripts.

We have, therefore, I think,—despite the slight fall in membership to which you, Mr. President, have made passing reference,—every right to feel satisfied with the work of the Society during the year which has just closed. I wish, however, to say a word as regards the future,—a word in amplification of what fell from the lips of your President at the beginning of his address.

In three years' time the Society will celebrate its 150th birthday. During the course of a long and useful life it has not only accumulated possessions,—many of them treasured possessions,—but it has entered into multifarious commitments and set up traditions of work to be performed at a regular rate of volume and progress. Now learned Societies are essentially not profit-making concerns, indeed little or no monetary return can be expected from the greater part of such a society's activities. Yet a society like ours has need of money at every turn,—need of money to make new acquisitions : need of money for the upkeep of the treasures already acquired. I am convinced that the greater part of this expenditure should be met rather from endowments than from current income and this seems to me to be the great practical need of the Society at present. The energy and devotion of its members are manifest, but support from the general public, by way of generous benefactions and endowments, is lacking.

This is not the first time this matter has been mentioned at an annual meeting. For some years now this aspect of the Society's finances has been forcing itself upon your Council. My predecessor, Lord Lytton, himself twice made reference to it in his addresses to the Society, and something has already been done towards putting the Society's endowments on a better footing. We have, for one thing, the Library Permanent Endowment Fund for which Colonel Sewell appealed this afternoon, and we have also the proposal which Lord Lytton supported that as far as possible future donors should themselves endow their gifts : the objective, as he pointed out, should be to set free current income for expenditure on current activities rather than on mere upkeep and standing charges. This is admirable advice but it does not, in my opinion, go far enough. We need at once a more generous and a more general endowment, and I think we can fairly look to a wider circle of benefactors than the Society's own members who have been our chief benefactors in times past. After all the Asiatic Society

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is a glory not merely to Calcutta or even to Bengal but to India. Such an appeal would be, it seems to me, in accord with the spirit of the times. Co-operation and conciliation, the promotion of good will and a better understanding,—these are the crying needs of the day in India. But this Society has been for a century and a half a centre of such co-operation,—making for mutual trust, understanding, and esteem within India herself and at the same time constituting itself by its normal activities one of the great propagandists for India and Indian ideals and culture to the world at large. The Society therefore has a claim to be regarded as of value not merely to the scholars of India but to all who value the name which India and Indian culture enjoy throughout the world. I would not then confine my appeal to the scholarly who are members of this Society: I think we can fairly make a wider appeal. An endowment of a few lakhs of rupees would do wonders for the Society and the giver would serve the cause not only of learning (which is an international asset) but of India.

I have been told,—and I believe it to be true,—that in the seventeen years between 1912 and 1929 (including, as you will notice, the whole period of the war) benefactions to the extent of forty lakhs were made to the Royal Society by the public spirited in Great Britain. There must be enlightened patrons of learning in this vast country also,—a country famous for its largesse and its liberality. Let the devoted work of five generations of scholars bear fruit in a generous response from those who,—in the words of the old Roman poet,—' would raise to themselves a monument more enduring than brass '.

And now it only remains to me to thank you for this invitation to attend your deliberations to-day and to voice my hopes for another successful year in the Society's long career. I congratulate both you, Sir, and the Society on your re-election as President for the current year. You have earned distinction alike as a Zoologist, a Biologist, an Anthropologist, and an Administrator; you will have, to assist you, the tireless General Secretary and a strong and, I believe, unanimous Council,—and I would take this opportunity of welcoming back to the Council our old friend, Sir Rajendra Nath Mookerjee, himself a past-President of the Society and a promoter of every intellectual movement in this part of the world. I am confident Sir, that under your direction and with the zeal and enthusiasm which we have come to expect of our Council and members, the Society may look forward to a thoroughly successful year.

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OFFICERS AND MEMBERS OF COUNCIL.
ASIATIC SOCIETY OF BENGAL, 1931.

Elected and announced in the Annual Meeting, 2nd February, 1931.

President.

Lt.-Col. R. B. Seymour Sewell, M.A., M.R.C.S., L.R.C.P., Sc.D. (Cantab.), F.L.S., F.Z.S., I.M.S., F.A.S.B.

Vice-Presidents.

Rai Upendra Nath Brahmachari Bahadur, M.A., M.D., Ph.D., F.A.S.B.
L. L. Fermor, Esq., O.B.E., D.Sc., A.R.S.M., F.G.S., M.Inst. M.M., F.A.S.B.
Sir R. N. Mookerjee, K.C.I.E., K.C.V.O., Hon. F.A.S.B.
The Hon'ble Mr. Justice C. C. Ghose, Kt., Barrister-at-Law.

Secretaries and Treasurer.

General Secretary :—Johan van Manen, Esq., C.I.E., F.A.S.B.
Treasurer :—K. C. Mahindra, Esq., B.A. (Cantab.).
Philological Secretary :—Mahāmahopādhyāya Haraprasad Shāstrī, C.I.E., M.A., D.Litt., F.A.S.B.
Joint Philological Secretary :—Shams al-'Ulama Mawlawi M. Hidāyat Ḥusain, Khan Bahadur, Ph.D., F.A.S.B.
Natural History Secretaries.
- Biology :—S. L. Hora, Esq., D.Sc. (Punjab), D.Sc. (Edinburgh), F.R.S.E., F.A.S.B.
- Physical Science :—W. A. Jenkins, Esq., D.Sc. (Sheffield), I.E.S.

Anthropological Secretary :—The Rev. P. O. Bodding, M.A., F.A.S.B.
Medical Secretary :—Lt.-Col. R. Knowles, B.A. (Cantab.), M.R.C.S., L.R.C.P., I.M.S., F.A.S.B.
Library Secretary :—B. S. Guha, Esq., M.A., Ph.D. (Harvard).

Other Members of Council.

The Hon'ble Mr. B. B. Ghose, M.A., B.L.
Sir J. C. Coyajee, Kt., B.A. (Cantab.), LL.B., I.E.S.
Jas. Insch, Esq.
K. C. De, Esq., C.I.E., B.A., I.C.S. (retired).
M. Mahfuz-ul Haq, Esq., M.A.

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EXHIBITION ANNUAL MEETING.

LIST OF EXHIBITS AS SHOWN AFTER THE ANNUAL MEETING OF THE ASIATIC SOCIETY OF BENGAL, ON THE 2ND FEBRUARY, 1931.

1. IMPERIAL RECORD DEPARTMENT.

Miscellaneous Historical Documents.

(1) A certified copy of an address submitted to the British Parliament by Raja Dibendar Narayan, a Zamindar of Bengal, in connection with the trial of Warren Hastings. Attested by Saiyid Tufail Ali Khan Quazi (1790).

(2) From Ali Ibrahim Khan, Judge at Benares. Reports that the Mahrattas have released Shah Alam from the room in which he was confined by Ghulam Quadir Khan after having been blinded by him. (24 October, 1788, No. 501.)

(3) Copy of *Firman*, confirming to the Company, the reversion of Lord Clive's *Jaqhirs*, agreeable to the Nabob's *sanad* before obtained. Written on the 24th of *Suffer* of the 6th year of the *Jaloos*. And the contents of the *Zimmun*. (O.C., 9 September, 1765, No. 7.)

(4) Copy of Articles of Agreement between Nawab Nudjumul Dowla of Bengal and the King of Delhi. (O.C., 9 September, 1765, No. 8.)

(5) Copy of a *Firman*, confirming to the Company Burdwan and the rest of their possessions in Bengal. Written on the 24th of *Suffer* of the 6th year of the *Jaloos*. And the contents of the *Zimmun*. (O.C., 9th September, 1765, No. 9.)

(6) Copy of *Firman*, confirming the Company's possessions in the Carnatic. Written on the 24th of *Suffer* of the 6th year of the *Jaloos*. And the contents of the *Zimmun*. (O.C., 9th September, 1765, No 10.)

(7) Copy of *Firman*, relating to the grant of the five Northern Circars in the Deccan, to the East India Company. Written on the 24th of *Suffer* of the 6th year of the *Jaloos*. And the contents of the *Zimmun*. (O.C., 9th September, 1765, No. 11.)

(8) Translation of a letter from the King giving General Carnac a present of two *lacs* of rupees. (O.C., 25 September, 1765, No. 7.)

(9) Abolition of the office of Naib Diwan of Bengal, Bihar, and Orissa. (Secret Cons., 28 May, 1772, No. 1.)

(10) Inquiry into the conduct of Maharaja Shitab Roy, Naib Diwan of Bihar. (Secret Cons., 19 November, 1772, No. 2.)

(11) Rajah Kullian Singh recommended to the office of Roy Royan of the Province of Bihar of the demise of his father Maharaja Shitab Roy. (Secret Cons., 27 September, 1773, No. 1.)

(12) Appointment of Rajah Kullian Singh to the post of Roy Royan of the Province of Bihar. (Secret Cons., 27 September, 1773, No. 2.)

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(13) Recommendation to the Governor-General for the grant of certain *jaigirs* to Rajah Kullian Singh. (Secret Cons., 17 April, 1775, No. 1.)

(14) Suppression of human sacrifice in the Hill Tracts of Orissa. (Pol. Cons., 19 October, 1855, Nos. 84-85.)

(15) Governor-General's minute regarding the introduction of a paper currency. (H.D. Pub., 1 May, 1780, No. 24.)

(16) Regulations for Treasury Notes. (H.D. Pub., 8 May, 1780, No. 19.)

(17) Form of the Treasury Notes. (H.D. Pub., 8 May, 1780, No. 20.)

(18) Proclamation declaring the resignation of Mr. Warren Hastings of the office of Governor-General of the Presidency of Fort William and the accession of Mr. John McPherson, Senior Member of Council to the same.

Endorsement by Mr. P. Yonge, Sheriff of Calcutta, declaring that the proclamation mentioned above has been publicly read out by him at the Court House. (H.D. Pub., 17 Feb., 1785, No. 2.)

(19) Copy of a letter Patent from His Majesty (King George III) under the Privy Seal dated the 7th August, 1800, constituting and appointing His Excellency the Most Noble Richard Wellesley Marquis Wellesley to be his Majesty's Governor-Gereral and Commander-in-Chief of all his Land Forces serving in the East Indies. (H.D. Pub. Cons., 26 Feb., 1801, No. 1.)

(20) Proclamation declaring the appointment of the Most Noble Richard Wellesley as Governor-General and Commander-in-Chief. (H.D. Pub. Cons., 26 Feb., 1801, No. 2.)

(21) A book exhibited as a fine specimen of inlaying work. This book was hopelessly damaged by larvæ and had almost become a solid mass of paper.

2. M. Mahfuz-ul Haq.

(*A*) *Manuscripts.*

(1) A copy of 'Aṭṭār's *Taḏhkirat-ul-Awliyā*, or the Biography of Saints, written in beautiful *Naskh* in the 9th century *Hijra*. This valuable copy once belonged to the library of 'Abdur Raḥīm, Khān Khānān, the great general of Emperor Akbar, whose autograph note it bears.

(2) A copy of 'Alī Yazdī's very rare *Ḥulal-al-Muṭarraz* (written in fine Nasta'līq), which once belonged to the Barīd Shāhī Kings of Bīdar (897–1018, A.H. 1492–1609, A.D.). On the occupation of Bīdar by Ibrāhīm 'Adil Shāh II of Bījapūr, the manuscript entered the library of the 'Adil Shāhī Kings and was later, taken away by Emperor Aurangzib, in 1097, A.H.

There are several seals of the Deccan Kings and of Emperor Aurangzīb and others, besides notes and *'Arḍ-dī das* in the handwriting of the Mughal librarians.

(3) A copy of Sanā'ī's *Ḥadiqat-ul-Ḥaqīqat*, transcribed by Saiyyid Jamāl bin Saiyyid Muḥammad al-Ḥusaynī, a calligraphist of the 10th century *Hijra*. The manuscript once belonged to the library of Prince Parwīz, an elder brother of Emperor Shāhjahān. No other manuscript bearing the seal of the Prince is known to exist.

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(*B*) *Specimens of Calligraphy.*

(1) A *Waṣlī*, signed by Mīr 'Alī al-Kātib, the court calligraphist of the Timurids of Persia (died C. 957, A.H.).

(2) A *Waṣlī*, signed by Mīr 'Alī al-Ḥusayni, probably identical with the former.

(3) A *Waṣlī* signed by Sulṭān 'Alī al-Kātib who "is acknowledged to have brought the art of *Nasta'liq* calligraphy to its highest perfection" (died C. 921, A.H.).

(4) A *Waṣlī* transcribed by Mālik ad-Daylamī, the teacher of Mīr 'Imād—the greatest calligraphist of Persia.

[No specimen of Daylami's calligraphy is known to exist in any public library in India.]

(5) A *Waṣlī* transcribed by Saiyyid 'Alī al-Ḥusaynī, who came to India at the instance of Emperor Shāhjahān to train Aurangzīb in the art of calligraphy. Later he obtained the title of *Jawāhir Raqam* from Emperor Aurangzīb (dated, Iṣfahān, 1058, A.H.).

(6, 7) Two illuminated pages from a Persian Manuscript.

3. H. E. Stapleton.

(1) *Inscribed image of Surya from Qasba (Ekdāla), Dinajpur District.*

The Image was discovered at Qasba (*alias* Bairhatta) in the Dinajpur District as the result of enquiries by Mr. Stapleton regarding the identity of the place with Ekdāla, the fortress of Ilyas Shah of Bengal, which was successfully defended by him in 1355 A.D. against Firuz Shah of Delhi. The statue is in a good state of preservation except for the hands being broken off, the nose mutilated, and the upper part of a figure just in front of the statue, the legs and a part of the left hand of which only remain. Unlike the usual representations of Surya, the newly discovered image is a seated one. In the lower part of the sculpture the seven horses of Surya's car are represented. To the extreme left is a wheel representing the one wheeled car of Surya and to the extreme left two human figures—possibly the donor and his wife. Above the horses in front of the statue there is the figure of Aruna, Surya's charioteer, sitting on a *makara*. On either side of Aruna there are two female figures shooting arrows, and representing the sun's rays. To the right of the image is found—a stout bearded male figure with a crown (Pingala or Agni), whose left hand rests on his stomach, the right hand being in *tatvamudra*; while to the left of the male figure there is a female figure carrying a chowrie in her right and a pot in her left hand. To the left of the image there is a similar female figure and to her left there is a crowned male figure representing Skanda, the General of Heaven, with his right hand in *Abhayamudra* and the left hand resting on the thigh holding a sword erect. To the right and left of the image there are 8 small figures which represent 8 out of the 9 *grahas* (planets), the 9th being the Sun. Above the head of the image there is a *Kirthimukha* on either side of which there is a figure of a nymph carrying a garland. At the base of the sculpture there is an *Anustubha* verse containing the name of the donor. The writing appears to date from the middle of the 13th century A.D. To the extreme right of the base there are two short lines each containing 4 letters, which are meaningless.

(2) *Bara Qasba Inscription.*

This inscription was discovered last January 1st by Mr. Stapleton at Bara Qasba on the Dinajpur-Malda District Board Road, near the

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southern boundary of the Dinajpur District. The neighbourhood is full of old sites which should be studied by the Archæological Department. The inscription is on the back of a piece of sculpture which contained two images, the feet only of which remain. Owing to the inscribed face having been used as a curry stone by a Sontal most of the surviving 15-line inscription has been rubbed away. The stone in its original condition was probably at least 4 times its present size. The top and the right portion of the inscription are broken, the last line only being in a fair state of preservation. The writing appears to belong to the 11th century A.D.

(3) *A sculptured Camel.*

Fragment of a large-sized statue, also from the Dinajpur District, of which only the lower half of the body remains but with the base intact. Probably the figure of a Yogini. Remarkable for the fact that the Vāhana, which is perfectly preserved, shows the well-sculptured figure of a camel, of rare occurrence in Bengal. Votive figures on the left rim of the base, at middle-height. Size of the camel slightly over one foot in length and height.

4. The Geological Survey of India.

(1) *Winkel-Zeiss microscope with Federov stage for determination of axial angles of felspar.*

This exhibit is of the latest pattern of petrological microscope, with Federov stage attached. The microscope is made by Winkel-Zeiss and designed by Wulfing. In the new type of Federov stage the Wright's bows are abandoned, the scale being on the axis of rotation. The Federov stage is used for the determination of the axial angles of crystals in thin sections. It is used particularly in the accurate determination of the plagioclase felspars, and is also used for the measurement of several optical features of crystals in thin section.

(2) *Illustration of the fracture of sandstones by the crystallisation of minerals.*

The force exerted by a crystal during growth has been investigated in recent years by Taber in America. The conclusion he comes to is that a crystal will separate out from a supersaturated solution and grow independently of any force that may oppose it, however great the magnitude of that force may be. It follows from this that any solution permeating a rock or other substance and allowed to crystallise will give rise to crystals which may eventually shatter the rock or substance. This knowledge has thrown a light on several engineering questions, as for example, the destructive result in cold countries of growing ice crystals in shattering concrete roads, due not to the expansion of ice on freezing, but to the actual growth of the ice crystals. The weathering of building stones is also influenced by the same phenomenon; salts from the soil, or even from mortar and plaster, crystallise in the building stone and flake off layers of stone. In the Jumma Masjid at Delhi an 18-inch layer of lime concrete was placed over the 9-inch thick slabs of sandstone forming a verandah roof, to strengthen the latter. The concrete had, however, the opposite effect. The monsoonal rains carried some of the lime down through the sandstone; the lime crystallised out near the lower surface of the sandstone and flaked off large pieces. The exhibit shows what may happen to a block of building stone in which copper sulphate has been allowed to crystallise.

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(3) *Display of asbestos from South India.*

The exhibit of asbestos is from the only workable deposit of chrysotile asbestos in India. It comes from Brahmanapalli, Cuddapah. The asbestos occurs as veins in both limestone and tachylitic basalt. The veins form a further illustration of the phenomenon described under No. 2 exhibit. The crystals of asbestos grew within planes of weakness in the rock until they formed definite veins by pushing apart the enclosing walls, the fibres being arranged at right angles to the latter.

(4) *A set of six borates from California is exhibited. These minerals have been recently acquired by the Geological Survey by exchange. They are of interest in that several are rare.*

(5) *A series of four maps of the geography of the ancient continent of Gondwanaland, showing the distribution of land and sea between the Permian and Cretaceous periods of geological history.*

(6) *Fossil specimens showing the evolution of the Pig in India, with a chart showing the genealogy of the different genera of pigs.*

(7) *A Pliocene serpent, preserved in oil-shale.*

(8) *Portion of jaw of fossil crocodile (Pliocene) showing peculiar method of succession of teeth.*

5. JOHAN VAN MANEN.

(1) *A set of Tibetan religious banners (thang-ka).*

The painted banner or scroll-picture is the most frequently met example of Tibetan pictorial art. In form it approaches the Japanese kakemono; in use that of the Russian ikon. It is hung in great numbers in Tibetan monasteries as well as in private houses in the shrine room.

The colouring of these paintings is usually vivid, in hard and glaring pigments. Evidently this bears a relation to the primitive domestic lighting of the country by torches and other forms of flickering, wavering but dim light. The outlines usually show similar flickering shapes. In the same way Tibetan music seems adapted to the space conditions of the country with its steep valleys and differences of level of the dwellings. It is essentially far-distance, open-air music like that of the Javanese gamelan, the Scottish bagpipes, or even the Tyrolean jodling.

It is unusual to find thankas in more subdued, softer hues; and a set of seven are here exhibited which show this rare characteristic. It is probable that they are Chinese copies of Tibetan originals in which the Chinese artist has substituted softness for the original brightness.

Two usual specimens added for comparison.

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(2) *Two manuscript scrolls containing over* 600 *Tibetan proverbs in the running character.*

Some books on proverbs and their literature added, especially one on Chinese proverbs, written on a novel plan.

6. The Zoological Survey of India.

(1) *Wooden Statue of a Palaung Woman.*

This figure of a Palaung girl shows the remarkable brass collars and other heavy ornaments worn by Palaung women. The whole costume and ornaments exhibited were worn by a girl of thirteen years of age. The Palaungs are a Mongoloid group of people, who live in the Northern Shan States (Burma) and speak a language allied to that of the Khasis.

(2) *Pearl-like Object found in a Prawn.*

(3) *Specimens and Models showing development of Suctorial Disc in the tadpoles of* Rana afghana.

(4) *Pug-headed specimens of the fish* Aoria gulio.

(5) *Goggles used by the Japanese fishermen for diving in the Andaman seas.*

7. The General Secretary.

(1) *The Society's publications of* 1930.

(*a*) Bibliotheca Indica.
(*b*) Catalogues.
(*c*) Journal.
(*d*) Memoirs.
(*e*) Proceedings, Indian Science Congress.

(2) *Some acquisitions of interest to the Library during* 1930.

(*a*) Presentations.
(*b*) Purchases.

(3) *Some recent publications by Members of the Society.*

M. Z. Siddiqi: Firdausu'l-Ḥikmat. Berlin, 1928.
D. R. Bhandarkar: Some Aspects of Ancient Hindu Polity. Benares, 1929.
Stein Konow: Kharoṣṭhi Inscriptions. Calcutta, 1929.
G. Tucci: Pre-Dinnāga Buddhist Text. Baroda, 1929.
Sir Aurel Stein: Archæological Tour in Waziristan. Calcutta, 1929.
U. N. Ghoshal: The Agrarian System in Ancient India. Calcutta, 1930.
R. P. Chanda: Exploration in Orissa. Calcutta, 1930.
B. C. Law: A study of the Mahavastu. Calcutta and Simla, 1930.
H. Hobbs: The Romance of the Calcutta Sweep. Calcutta, 1930.

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Sir J. G. Frazer: Myth of the Origin of Fire. London, 1930.
P. O. Bodding: Santal Folk-tales; Vol. 3. Oslo, 1929.
R. Knowles and R. Senior-White: Studies in the Parasitology of Malaria. Calcutta, 1930.

(4) *Catalogue of Sanskrit Manuscripts in the Society's Collections, by MM. Haraprasad Shastri.*

(5) *Presentations to the Society received in* 1930.

(*a*) Album of Photographs of Law Members of the Governor-General's Council from 1834 to 1930.
(*b*) A Tibetan Manuscript calligraphically written.

(6) *Copper dummies of three medals awarded by the Society.*

(*a*) Sir William Jones.
(*b*) Dr. N. Annandale.
(*c*) Joy Gobind Law.

(7) *Some interesting books from the Society's Library.*

(*a*) Mohl's edition and French translation of Firdusi's Shahnamah. Paris, 1838.
(*b*) Montanus—Ogilby. Embassy to the Emperor of Japan. London, 1670.
(*c*) Valentyn. Description of the lives of the Great Moguls, etc. (in Dutch). Amsterdam, 1726.
(*d*) Joseph Moore. Views taken at and near Rangoon. London, 1825-26.
(*e*) De Freycinet. Voyage autour du Monde. Atlas, Zoologie. Paris, 1824.
(*f*) Mischna, Hebrew and Latin, with the complete commentary of Maimonides, edited by Surenhusius. Amsterdam, 1698.
(*g*) Luigi Mayer. Views in Egypt. London, 1801.
(*h*) Three recently discovered copperplates from Talcher, Orissa, all relating to the Kazra dynasty. One was issued by Subha Karadev who succeeded Kusumabharadev, son of Hiramahadevi. Two were issued by Siva Karadev. All three record the grants of villages.

8. Narendra Nath Ganguly.

Some old Serampore editions.

(*a*) *Hitopadesha*, translated into Bengali from the original Sanskrit by Pandit Golok Nath. Serampore, 1802.
(*b*) *Tota Itihas*, by Chandi Charan Munshi. Serampore, 1805.
(*c*) *Lipi Mala*, a series of letters in old Bengali on different subjects, by Ram Ram Boshoo. Serampore, 1802.
(*d*) *Puroosh Parikhya*, by Haraprasad Ray. Serampore, 1815.

9. James Insch.

(1) *Ivory plaque depicting a scene at Akbar's Court.*

The plaque represents a scene at Court with the great Akbar, surrounded by his eight chief courtiers. Together they are called the *nava ratna* or nine gems.

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The eight courtiers are :—

1. Abul Fazl, the Prime Minister and author of the *Ain-i-Akbari.*
2. Faizi, the poet laureate and the translator of Hindu and Christian Scriptures into Persian.
3. Raja Man Singh, one of Akbar's best Generals and Governors.
4. Raja Todar Mall, an unrivalled revenue expert.
5. Raja Birbal, a companion and a jester.
6. Hakim Abul Fath Gilani, the court physician.
7. Khan Khanan, the great General.
8. Tan Sen, the court musician.

The plaque may be a contemporary production. Akbar reigned from 1556 to 1605.

(2) *A Chinese screen inlaid with tiles.*

(3) *Rare specimen of a double figure carved in ivory.*

Probably an unidentified Rajput personage with his wife.

10. H. W. Acton.

Three Gandhara Sculptures.

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ANNUAL REPORT FOR 1930.

The Council of the Asiatic Society of Bengal has the honour to submit the following report on the state of the Society's affairs during the year ending the 31st December, 1930.

Ordinary Members.

Totals. The calculated total of Ordinary Members on the roll of the Society at the close of 1930 was 596 as against 618 at the close of 1929, a net decrease of 22 during the year. This is the second decrease in membership to be recorded after an uninterrupted and rapid growth for a consecutive period of five years. The regression is not abnormal and the Society's Ordinary membership still stands the third-highest for any year in its long history; nevertheless the Society should not relax its endeavours to increase its membership totals in the only manner in which such endeavours can be profitable, namely by energetic scholarly work and solid productivity.

Gains and losses. These were as follows during the year:—

Gains.		*Losses.*	
Old elections carried forward	5	Applications withdrawn ..	2
New elections	44	Elections lapsed	6
Resignation withdrawn ..	2	Elections carried forward ..	2
Rule 39	2	Deaths..	12
		Resignations	45
		Rule 38	7
		Rule 40	1
Total	53	Total	75

Initial total 618; net loss 22; final total 596.

General. The annual loss in membership during 1930 was less than for the two previous years, but there was a great diminution in the number of new admissions, their total number being the smallest for the last eight years, namely 44. As was pointed out in the previous year's report, it is likely that for some time to come our period of rapid expansion will prove to be over. Membership in a learned Society represents in a way a luxury expenditure and it is no wonder that the sensitive barometer of our membership statistics has reacted immediately to the universal economic depression which has been so characteristic of the year under review. That our annual loss has been 10 less than that during the two previous years, and not much greater than for the two years before these, seems to point out that the degree of stability of our membership is rising.

Amongst the 45 resignations of the year 40 were those of recent members enrolled within the last seven years.

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Rule 38, dealing with members whose subscriptions are in arrears, was again strictly applied—a vital necessity for sound administration—and the names of seven members were consequently removed from the rolls for this cause.

It is to be regretted that, year after year, some members who have lost interest in their membership, instead of sending in their resignations, allow their subscriptions to fall in arrears, so as to become subject to removal as defaulters, which is neither a dignified proceeding, nor conducive to sound administration. There are still far too many names on the Treasurer's arrears list.

A detailed cross-check of the membership lists was, as usual, made at the end of the year, ensuring the reliability of the statistics given.

Non-resident Members. Their total has again improved and stands now at 194 as against 181 at the end of last year. Our highest total on record for this class of members was 229 in 1912.

Life-members. The total of our life-members has once more increased, from 49 to 52. Two were lost by death; and five compounded during the year. The ideal is that every old member of twenty years' standing should enter this class. We have just over 80 such old members on our roll of whom nearly 30 have compounded for life-membership.

Deaths. The hand of death has been heavy during the year. Amongst the distinguished and especially valued Members lost to us, whose memory will be cherished, and for whose departure the Society is the poorer, the following may be mentioned:—

W. H. Miles (Ordinary Member, 1884).
R. D. Mehta (Ordinary Member, 1886).
Lt.-Col. D. C. Phillott (Fellow, 1910, Ordinary Member, 1889).
H. G. Graves (Ordinary Member, 1905).
R. D. Banerji (Ordinary Member, 1907).
Sir Binod C. Mitter (Ordinary Member, 1925).
J. Langford James (Ordinary Member, 1926).

Associate Members.

During 1930 no new Associate Members were elected.

The two most senior Members in this class were lost by death:—

A Führer (1885).
A. H. Francke (1902).

The present number stands at 8; statutory maximum 15.

Special Honorary Centenary Members.

Our only surviving Special Honorary Member still remains with us.

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Institutional Members.

No accessions to this class were booked during the year. Their number is 2.

Ordinary Fellows.

At the Annual Meeting held on the 3rd February, 1930, the following Members were elected Ordinary Fellows :—

H. W. Acton.
G. de P. Cotter.
S. L. Hora.
J. P. Mills.
Meghnad Saha.

One Fellow was lost by death :—

D. C. Phillott (1910).

At the end of 1930 the number of Ordinary Fellows was 47 ; statutory maximum 50.

During the year the number of Fellows on the roll approached, for the first time since the institution of the rank, the statutory maximum. This necessitated a careful review of the existing regulations regarding the election of Fellows. This and certain connected problems were considered by the Fellows during the year, and will be dealt with during the coming year.

Honorary Fellows.

During the year three distinguished scholars were elected Honorary Fellows :—

R. Robinson, London.
W. Caland, Utrecht.
H. Jacobi, Bonn.

One Honorary Fellow was lost by death :—

Prof. A. A. Macdonell, Oxford.

At the end of 1930 the number was 29 ; statutory maximum 30.

Obituary.

During the year the Society to its great regret, received news of the death of the following distinguished individuals, who were formerly members :—

H. Bruce Hannah (Associate Member, 1919–29).
J. Watt (Ordinary Member, 1912–15).
G. C. Dudgeon (Ordinary Member, 1889–1910).

Condolences.

The Council expressed its condolences to the relatives of the following distinguished personalities deceased during the year :—

R. D. Mehta.
Sir Binod C. Mitter.

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Council.

The Council met 13 times during the year. The attendance averaged 12 of the 20 component members.

The following resolutions of thanks were passed by the Council :—

To the retiring Members of Council, and especially the President, for the way in which they have served the true interest of the Society.

To Dr. U. N. Brahmachari for the presentation to the Society of a wall-clock.

To Sir C. C. Ghose for his attendance at and advice given to a special Council Meeting.

To Dr. S. L. Hora for the presentation of a copy of his paper on the "Study of Hamilton Buchanan's Gangetic Fishes."

To Col. R. B. S. Sewell for his services rendered in officiating for the General Secretary during the latter's absence.

To Dr. U. N. Brahmachari for his offer to defray the expenses of serving light refreshments to the members before the General Meetings and for his presentation of a set of crockery for the purpose.

To Sir C. C. Ghose for his assistance and advice in matters regarding the new municipal assessment.

To Dr. Baini Prashad for his endeavours to obtain financial assistance for the Society from certain bodies in the United States of America.

To Dr. U. N. Brahmachari for the presentation to the Society's library of a copy of Webster's New International Dictionary.

Office Bearers.

The changes in the Council during the year were as follows :—

Dr. Baini Prashad resigned as a Member of Council on account of absence from India, and was replaced by Prof. M. Mahfuz-ul Haq from May.

The General Secretary was absent from the 12th April to the 17th May and the President, Lt.-Col. Sewell, officiated for him during his absence.

Mr. K. C. Mahindra, the Treasurer, was absent from 25th November to the 4th December and the General Secretary officiated for him during his absence.

Absences other than those mentioned above were :—

Dr. Jenkins, from April for the remainder of the year.
Lt.-Col. Sewell, one month, November–December and one week in December.
Dr. Guha, two months, October–December.
Rev. A. Willifer Young, one month, November.
Sir J. C. Coyajee, three months, June–September.
Mr. K. C. De, two and a half months, October–December.
Mr. Insch, four months, April–August.
Dr. Brahmachari, two months, June–July.

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Committees of Council.

The standing Committees of Council during the year, namely, the Finance, Publication, and Library Committees, met monthly.

Special Committees were appointed to report on the financial and other aspects of the *Bibliotheca Indica*; to draw up a memorial to the Government of Bengal in connection with the suggested formation of an Indian National Research Council; and to consider a suggestion for the institution of a periodical Indian Historical Conference.

The conclusions of the first Committee were adopted by the Council, as was a memorial drawn up by the second Committee.

The third Committee has still to report.

Finance Committee.

The Finance Committee continued during the year to meet separately on dates different from those of the Council Meetings.

A special budget meeting was held in December for consideration of the next year's budget.

Office.

General Secretary. The General Secretary was absent on leave from the 12th April to the 17th of May, and again for two days later on in May. He continued to perform the amalgamated duties of General Secretary and Assistant Secretary and, apart from the two above-mentioned periods of absence from Calcutta, attended office during all days of the year, holidays and Sundays included, except six.

Staff. Changes in the office staff occurred as follows :—

The services of D. K. Samaddar, Library Pandit on long leave, were dispensed with from 1st April and B. B. Mukherjee was appointed on probation in his place from the 2nd June.

N. M. Ramachandran was appointed from the 12th February as a general assistant in the vacancy left by P. J. Ooman at the end of the previous year.

Mr. H. L. Prudhomme was temporarily engaged to help with the old files, for about three months from 21st August to 30th November.

Attendance and spirit were generally satisfactory but in its totality our staff is not yet what it ought to be either in quality or in quantity. Our work is too highly specialised to be merely mechanical. The Society's resources do not permit of an increase of salaries or extension of personnel on any large scale. The problem has been mentioned before in the annual reports and need not again be elaborated. The problem of holidays remains a difficulty. Endeavour to secure an exten-

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sion of the number of holidays allowed under the staff-regulations has again caused friction and in one or two cases an actual breach of discipline.

Subordinate Staff. In the subordinate staff the usual minor changes took place, which do not call for comment, but which demonstrated again the characteristic lack of stability in menial employment.

Correspondence. Year after year it is demonstrated that correspondence is one of the vital activities of the Society, and yet there is no letter-drafter or stenographer on the staff to make the work easier. During the year the clashing demands of the various activities of the office were more than usually at war with each other, and the number of outgoing letters fell, in direct consequence, to 2704 from the previous year's total of 3270. This means a certain amount of complaints of procrastination or non-attention, and harassment for the General Secretary as well as for some of his correspondents. The strengthening of the clerical capacity of the office remains one of its most urgent needs. India is a land of distances, and consequent great postal activity, and even in a large tropical city like Calcutta it is so much easier to send a note than to pay a personal call. As long as the Secretary can only settle to his other work after having drafted an average of ten to twelve letters, small and large, each working day, so long overwork and the absence of that leisure which ensures the best work, must remain unavoidable.

The number of incoming letters was 3309 as against 3897 the year before.

Council Circulars. The number of Council and Committee circulars issued during 1930 was 165.

Files. Some progress was made with regard to the files, old and new. For a period of about three months Mr. H. L. Prudhomme was engaged as a temporary help for this task. He did some useful work in cleaning up a certain amount of old matter, and in eliminating a portion of the "dead matter" which for years has been encumbering our archives. As a by-product an interesting set of signatures of all kinds of notabilities amongst our correspondents has been taken from old letters of no significance or value whatever for their contents and has been arranged in autograph scrap books. It is the intention to continue this collection of autographs, which will become more valuable as it grows and as time goes on.

It may be noted that the last eight annual reports record the engagement and subsequent leaving of at least eight successive file-clerks, who were intended to create order in the chaos of old files, one after the other, after brief spells of employment. One still hopes that the right man will turn up in the near future, one who will conquer, and not be defeated by, our old papers.

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Stock-room. Labelling, bundling, and registration of the contents of the stock-room was kept up-to-date during the year for new publications. The stock books for new accessions and for sales were also kept up.

An important activity taken up during the year was the sorting out, bundling and stock-registering of the copies of the old series of our *Journal*. By the end of 1930 the volume for the year 1894 had been reached and it is hoped that early in the new year this important undertaking will be completed.

Next, the old copies of the *Proceedings* have to be taken up, and then the miscellaneous publications. The back of the work has now been broken, and its end is in sight. It is six years since it was begun.

Distribution. No change was made in the mode of distribution of our publications and notices. An appreciable amount of issues of the *Bibliotheca Indica* was again distributed during the year.

Addresses. The printed address labels remained in use and a system of constant revision and addition has been adopted which enables us to keep the printed addresses up-to-date month by month.

Card Register. The card registers of the Society's membership and of the Indian Science Congress were kept up-to-date and checked at the close of the year.

Stationery. The administration regarding this item now being satisfactorily arranged, the subject does not call for special remarks.

Circulars and Forms. The number of these printed during the year was 60, being practically the same as in other years as in previous reports the monthly meeting notices are not included in the totals.

Office Furniture. Dr. Brahmachari presented a useful wall-clock for the Council Room. For the Secretary's office a new large desk was acquired. An additional table was added to the staff room. Four dozen collapsible chairs were bought for use in the meetings, making the Society independent of hired chairs for almost all but the Annual Meetings. Some minor items were also acquired. Our furniture has vastly improved during the last few years but several very old and worn out items need replacement notably a large part of our electric fans, which have almost reached the limit of their serviceability, and their renovation will mean a fairly large item of expenditure.

Office Manual. This still remains a desideratum.

Arrangement. During the year a further re-arrangement was made with regard to the seating of the office staff. Seats for two assistants were found in the office space and their work removed from the central hall, thus reserving this entirely for the use of members.

General. The finances of the Society, and consequently

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the available staff are not, by a long way, commensurate with the Society's possessions and commitments. The secret of the success of a learned Society lies first in its work and activity, and only next in its collections and possessions. The staff worked on the whole with zeal, but had tasks set them, with which they could not yet cope perfectly. A large endowment fund for the employment of an adequate and qualified staff seems the only possible solution of this urgent problem. A learned Society is, as universal experience shows, not directly productive financially, and our Society has in comparison with other learned institutions been remarkably poor in the receipt of important financial benefactions. The several posts on the staff which still have to be filled, have been detailed in several previous reports to which the members may be referred.

Rules and Regulations.

During the year no changes were made in the Rules of the Society. Some minor changes were introduced in the Regulations regarding the Provident Fund, and the Election of Fellows.

Indian Science Congress.

The Seventeenth Annual Meeting of the Indian Science Congress was held in Allahabad, from January 2nd to January 7th, 1930, under the patronage of His Excellency Sir William Malcolm Hailey, G.C.I.E., K.C.S.I., I.C.S., Governor of the United Provinces. Col. S. R. Christophers was President. The *Proceedings* of the Congress were published in December. The publication contained 580 pages, 80 more than the year before. During the latter months of the year the usual administrative work for the Congress in connection with the next Session (Eighteenth Congress) to be held in Nagpur, was performed by the Society's Office. The flourishing condition of the Congress entailed considerable labour and as usual the rush at the end of the year was exceedingly great, this year again reaching almost to breaking point. The number of abstracts sent in for reading to the Congress has increased this year to 748 as against 259 five years ago.

As in previous years the abstracts were sent, as far as was practicable, by post to all members who had applied for membership before the date of publication. This year this date was again late, the 19th December, leaving once more a barely sufficient margin of time to reach distant members before their departure for Nagpur. Lateness of enrolment is on the increase, and of late years the number of members locally enrolled during the actual session of the Congress has been steadily growing. This matter is presenting a serious

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problem which needs the careful attention of the Congress authorities.

The Congress finances remained separate from those of the Society.

The General Secretaries to the Congress were Prof. S. P. Agharkar, as in previous years, and Prof. H. B. Dunnicliff, newly elected during the year, *vice* Dr. R. V. Norris, resigned.

The general administration of the Congress, when not in session, continued, as hitherto, to be attended to by the Office of the Society.

The Council issued a reprint of the *Proceedings* of the Fourth Congress, Bangalore. The Council also decided to reprint the *Proceedings* of the Fifth Congress, Lahore, which has been out of print for a long time.

The great expansion of the Congress has produced certain administrative problems and difficulties in urgent need of solution. These matters have been considered by the Congress authorities during the year; and a revised set of rules for the Congress is to be placed before the Nagpur Meeting for adoption.

Indian Museum.

The Society's representative on the Board of Trustees of the Indian Museum, under the Indian Museum Act, X, of 1910, continued to be Rai Upendra Nath Brahmachari Bahadur.

Kamala Lectureship.

The Council's nominee to serve on the Election Committee of the Kamala Lectureship, administered by the Calcutta University, remained the same, MM. Haraprasad Shastri.

Deputations.

The Society received invitations to send representatives to various functions of the undermentioned bodies:—

(1) Sixth Session of the All-India Oriental Conference, Patna, December, 1930.
(2) Centenary Meeting of the British Association for the Advancement of Science, London, September, 1931.
(3) Seventh International Ornithological Congress, Amsterdam, June, 1930.
(4) International Botanical Congress, Cambridge, August, 1930.

Mr. K. C. De was invited to represent the Society at the first, and Dr. Baini Prashad at the third function. The invitation to the second function was accepted. It was not found possible to arrange for personal representation at the fourth.

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Honours.

It pleased His Majesty to confer the distinction of Honorary C.I.E., on Mr. Johan van Manen in his capacity as General Secretary to the Asiatic Society of Bengal.

Congratulations.

The Society sent its cordial congratulations to its Member and Fellow, Sir C. V. Raman, on the occasion of his receiving the Nobel Prize for Physics.

Visits.

An appreciable number of distinguished personalities visited the Society during the year. Amongst them were residents of Siam, Java, India (Port Blair, Cambay, Madras, etc.), the United States of America, England, France, Germany, Holland, and Switzerland. Specially welcome were the visits of Mrs. R. W. Fraser, for many years Secretary of the Royal Asiatic Society, of Members of the Visser Karakorum Expedition, of the Dyhrenfürth Kangchenjunga Expedition, of the Hon. Anne Wood, and of Prof. J. van Kan, late President of the Batavian Society of Arts and Sciences, and now Law-Member of the Council of the Viceroy of the Dutch East Indies.

Social Functions.

No social functions were held by the Society during the year, but the Society, enabled to do so by a generous donation from Dr. U. N. Brahmachari, has revived the ancient practice of providing light refreshments to the Members present before the General Meetings.

Elliot Prize for Scientific Research.

The prize offered for the year was for research in Physics. No papers were submitted in competition for the prize. The prize for the next year (1931) will be for research in Geology and Biology (including Pathology and Physiology).

It has become evident that there are certain inherent difficulties in the present manner of awarding this prize. In several years no suitable candidates, or no candidates at all, have come forward to claim it. A scrutiny of the terms under which the prize is awarded is called for in so far as the Society is concerned.

Barclay Memorial Medal.

The (biennial) award of the Barclay Memorial Medal for 1929 was announced in the Annual Meeting of 1930. The

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medal was bestowed on Mr. A. Howard. Dr. U. N. Brahmachari received the medal on behalf of Mr. A. Howard.

The next award will be made in 1932.

Sir William Jones Memorial Medal.

The next (biennial) award of the Sir William Jones Memorial Medal, for 1930, for Asiatic Researches in Science, will be announced in the Annual Meeting in February, 1931.

Annandale Memorial Medal.

The next (triennial) award, for important contributions to the study of Anthropology in Asia, will be announced in the Annual Meeting in February, 1931.

Joy Gobind Law Memorial Medal.

The first (triennial) award of the medal for conspicuously important work on Zoology in Asia (for 1929) was made to Prof. Max Weber in the Annual Meeting of 1930. Dr. H. G. Von Oven, Consul-General for the Netherlands, received the medal on behalf of Prof. Max Weber.

The next award will be made in 1933.

Paul Brühl Memorial Medal.

It is the intention to make the first (triennial) award, for important contributions to the study of Indian Botany, in 1932.

Regulations for the award are to be framed in the course of the current year.

Calcutta Indian Science Congress Prize.

The first award is to be made in connection with the next session of the Congress to be held in Calcutta, and regulations are to be framed by the Council of the Society prior to the date of that session.

Society's Premises and Property.

A sum of Rs. 2,000 was set aside during the year to be credited to a Building Repairs Fund.

The various desiderata and problems existing under the heading Premises and Property have been mentioned in the annual reports of the last few years and have to be kept in mind until realisation.

Accommodation.

The old problems still needing attention are: the provision of a set of small work-rooms for various uses, foremost of all for

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the archives and the editorial work of the Society, extension of the steel shelving in the library and better shelving in the stock-rooms.

Artistic and Historical Possessions.

Sir B. L. Mitter, Law Member, Viceroy's Council, and a former Member of Council of the Society, presented an album containing the photographs of the successive Law Members from 1834 to the present date. This album, quite apart from the great rarity of several of the photographs, is all the more of interest to the Society, on account of the fact that several of the personages represented, including the first and last, were active members of the Society.

The Assistant Surveyor General of India presented an old and ornate MS. volume in Tibetan dealing with Buddhist theology.

No paintings were cleaned or renovated during the year. The set of photographs of our paintings has still to be completed and that of our statuary to be begun.

Presentations, Donations, and Legacies.

Dr. Brahmachari presented a wall-clock for the Council room and a set of crockery, etc., for serving light refreshments to the members present before the General Meetings, and also met the expenses incurred on this account.

Other presentations are mentioned under the previous heading and under that of Library.

Library.

Permanent Library Endowment Fund. This fund received no further donations during the year. The total invested capital (face value) remains Rs. 11,000. The accumulated interest will permit the purchase of one further paper of Rs. 1,000 (face value, $3\frac{1}{2}\%$) during the current year.

As the total investments in $3\frac{1}{2}\%$ paper have to be raised to a face value of Rs. 30,000 before income from the fund can be utilised in aid of Library expenditure, it is necessary that approximately another Rs. 15,000 should be received before this desirable goal is reached. May this further sum come soon!

Accessions. The accessions to the Library during the year, exclusive of about 200 periodicals received through exchange or otherwise, numbered 370 volumes, out of which 154 were purchased and 216 were acquired by presentation. The number of presentations includes 65 volumes, donated by the Imperial Record Department, Calcutta, consisting mainly of interesting old grammars and dictionaries.

The grant for the purchase of books for the year was

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Rs. 2,500 but actually an amount of Rs. 2,535 was spent. For the new year the grant has been raised by Rs. 300 and fixed at Rs. 2,800.

The more important items of presentations are given below. They include a most useful copy of the latest edition of Webster's New International Dictionary, generously presented by Dr. U. N. Brahmachari. Mr. K. C. De presented some valuable ichthyological works.

Presentations of Interest.

(1) I. Stchoukine: Miniatures Indiennes de Musée du Louvre, Paris, 1929 (Author).
(2) Sten Konow: Kharoshṭhī Inscriptions, Calcutta, 1929 (Govt. of India).
(3) Mahabharata. Fasc. 1-4. Poona, 1927–30 (Govt. of India).
(4) Webster's New International Dictionary of the English Language. 2 Vols. London, 1928 (U. N. Brahmachari).
(5) M. T. Z. Tyan: Two years of Nationalist China. Shanghai, 1930 (Consulate-General of the Republic of China for India).
(6) F. Day: Illustrations of the Fishes of Malabar, n.p., 1866 (K. C. De).
(7) N. K. Sethi: The Hindi Scientific Glossary: Physics, Allahabad, 1929 (Nagari Pracharini Sabha, Benares).
(8) P. V. Kane: History of Dharmasastra. Vol. I. Poona, 1930 (Director of Public Instruction, Bombay).
(9) W. Bonser and T. A. Stephens: Proverb Literature. London, 1930 (Folk-Lore Soc., London).
(10) G. Tucci: Pre-Dinnāga Buddhist Texts. Baroda, 1929, G.O.S., 49 (Oriental Inst., Baroda).
(11) A Descriptive Catalogue of Sanskrit MSS. Vols. 7, 8, 9, Tanjore, 1930 (Tanjore Maharaja Serfoji's Sarasvati Mahal Lib.).
(12) Surya Kumar Bhuyan: Kamrupar Buranji [Gauhati], 1930 (Dept. of Historical and Antiquarian Studies, Assam).
(13) A. A. P. Rodrigues: Ansa Hypoglossi. Porto, 1929 (F. de Mello).
(14) D. J. H. Nyessen: Somatical Investigation of the Javanese, 1929 [Bandoeng, 1930] (Anthropological Laboratory of Java).
(15) S. Bhagavantam: The Raman Effect [Calcutta, 1930] (Sir C. V. Raman).

Accessions Lists. Two quarterly lists of additions to the Library were published during the year and distributed to the members, the remaining ones for the period have been prepared but are still in the press.

Preservation. The use of *nim* leaves and the practice of dusting the volumes with an insecticide powder were continued.

Binding. During the year 1,212 units, including books, pamphlets, and periodicals, were bound at the cost of Rs. 1,142, out of total budget allowance of Rs. 1,500 sanctioned for the purpose.

The vigorous binding policy for the last seven years has now almost attained its object, and arrears in binding have now practically been wiped out. In all about 10,700 units have been bound during the last seven years. It has consequently been possible again to reduce the binding grant for the next

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year, by another Rs. 300, and it has been fixed at Rs. 1,200. The book-purchasing grant has been increased with an equivalent amount and has been fixed at Rs. 2,800.

Arrangement. An important activity during the year was the segregation of the Pamphlets in our collection. More than 1,000 of them were assembled, given a separate place and, when necessary, bound. A device was introduced by which even the thinnest pamphlet can be identified on the shelf without any necessity to take down a handful of them or to open any item in order to ascertain its contents. A few medical serials in the collection were taken upstairs, relabelled and placed near other medical books.

Catalogue. Work on the new Author Catalogue of books in European Languages was continued steadily and as rapidly as the available means permitted. By the end of the year 208 pages had been printed off, reaching half into the letter H. Copy for the letter L, inclusive, was made ready for composition. Page proofs have advanced to page 240.

Shelving. Installation of special steel shelving for MSS. and books in the western section remains to be effected, and provision has also to be made for further steel shelving, especially for the current accessions of periodical literature.

Finance. Attention should once more be drawn to the fact that a sum of Rs. 4,000 annually, which constitutes the utmost limit which the Society at present can devote to purchase and binding of books, is entirely inadequate to build up or to maintain a first-class library. Administration and upkeep of our present collection demand at least an equal amount annually, and the total expenditure is a heavy burden on the Society's yearly budget. It is impossible to stress sufficiently the necessity for the speedy creation of a considerable endowment fund for our library. We have made a beginning, but that beginning is small. We need the generous help of all friends interested in our work and in learning in India, to make the little twig recently planted grow rapidly into a sheltering banian.

Finance.

Appendix III contains the usual statements showing our accounts for 1930. No change has been made in the form of their presentation, but the title of the account previously called "Loan Account" has this year been altered to "Advances Account" (Statement No. 20).

New statements are the following :—

Statement No. 22, Building Repair Fund Account.

Statement No. 26, Fixed Deposit Account, Central Bank of India.

Statements still carried over without change from the

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previous year, pending final ascertainment of commitments and status before liquidation, are :—

Statement No. 9, Catalogue of Scientific Serial Publications, Calcutta.

Statement No. 10, International Catalogue of Scientific Literature, London.

The other statements are presented as in the previous year and do not call for special comment.

The fund accounts again show their invested assets at their market values at the end of the year, and the Investment Account, Statement No. 27, shows the allocations of invested paper to each fund specifically, whilst as usual both market and face values of the investments are given in it.

Statement No. 8 shows the Building Fund Account. This year, investments of the face value of Rs. 13,000 3½% G.P. Notes, originally allocated to this fund, have been transferred to the Permanent Reserve of the Society in respect of which the market value of the paper, as on 31-12-1930, has been credited to the account. The corresponding amount has been credited to the fund in cash and will be suitably invested.

Statement No. 29 shows the Balance Sheet of the Society and the different funds administered by and through it.

The funds belonging to, or administered by, the Society may be classified as follows :—

1. General Fund.
   (*a*) Permanent Reserve.
   (*b*) Working Balance.
2. Specific funds belonging to the Society.
3. Funds administered by the Society.

At the end of the year, the position of these funds, as compared with their position at the end of 1929, was as follows :—

	Face value. 31st Dec., 1929.	Market value. 31st Dec., 1929.	Face value. 31st Dec., 1930.	Market value. 31st Dec., 1930.
	Rs.	Rs.	Rs.	Rs.
1. General Fund	2,52,000	1,81,150	2,75,000	1,89,360
(*a*) Permanent Reserve	2,06,200	1,40,170	2,25,600	1,43,070
(*b*) Working Balance ..	45,800	40,980	49,900	46,290
2. Specific funds belonging to the Society .	56,730	47,370	52,480	43,900
3. Funds administered by the Society	27,230	22,880	29,200	23,040
TOTAL ..	3,35,960	2,51,400	3,57,180	2,56,300

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The amount standing to the credit of the Permanent Reserve Fund at the end of the year is Rs. 2,25,600 face value invested in 3½% Government paper.

During the year Rs. 1,280 were received through admission fees and five members compounded for their subscriptions to a total amount of Rs. 1,024. A sum of Rs. 10,000 as budgeted together with a sum of Rs. 4 cash balance brought forward from 1929 under this head, in all totalling Rs. 12,308, was transferred to the Permanent Reserve. This was effected by a conversion at the market rates, according to a Council decision of 1925, of investments belonging to the temporary reserve of the working balance (Government paper 3½% of the face value of Rs. 19,400).

A cash balance of Re. 1/2/- is being carried over to the ensuing year, for adjustment under this head.

The Society received the following grants from the Government of Bengal as follows :—

For	Rs.	Statement.
Journals	2,000	1.
O.P. Fund No. 1	9,000	2.
O.P. Fund No. 2	6,000	3.
Sanskrit MSS. Fund	3,600	4.
Do.	3,200	4.
TOTAL ..	23,800	

The Government of India grant of Rs. 5,000 for the Arabic and Persian Manuscripts and Cataloguing Fund, sanction for which was pending in 1929, was definitely renewed during this year for a further period of 5 years, with effect from 1929 and the Society accordingly received a sum of Rs. 10,000, for the two years 1929-30 and 1930-31 (*vide* Statement No. 5).

The income derived from advertising during the year amounted to Rs. 9,600.

The temporary investments of funds in Fixed Deposit and Savings Bank are shown in Statement Nos. 24, 25, and 26. An amount set aside for earmarked expenditure is shown in Statement No. 11, as also in Statement No. 22, indicating a sum set aside for meeting expenditure on repairs of the Society's building at a future date.

Statement No. 23 gives an account of the amounts due to and by the Society for members' subscription, sales of publications, and contingent charges.

The Government securities, shown in Statement No. 27, are held in safe custody by the Imperial Bank, Park Street Branch. There was again a further depreciation at the end of the year of the Government securities held, amounting to a total of Rs. 14,271. The depreciation on the face value

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increased to Rs. 1,00,367 as against Rs. 86,095 at the end of 1929, affecting the balance sheet adversely to that extent.

The Budget estimates for 1930 and the actuals for the year were as follows :—

Estimates :	Receipts. Rs.	Expenditure. Rs.
Ordinary	63,600	63,600
Extraordinary	5,750	5,750
TOTAL ..	69,350	69,350
Actuals :		
Ordinary	66,440	60,901
Extraordinary	2,304	2,304
TOTAL ..	68,744	63,205

Of the receipts, a sum of Rs. 2,304 derived from entrance fees and compounding fees is classed as extraordinary and is not available for expenditure as it has to be transferred to the Permanent Reserve. A sum of Rs. 3,750 under the heading extraordinary income made available for work in connection with arrears in the publication of the Society's *Journal* is being carried over for the ensuing year as the demands for printing during the year for *Journals* were to that extent below the Society's budget allowance.

The ordinary income was about Rs. 2,840 in excess of the estimates, practically accounted for by income over the estimates from Interest under the new head "Interest on Fixed Deposits", from Members' Subscriptions, and from the rebooking of a sum of Rs. 1,240, under the heading Refund of Corporation Tax.

The Council notes with great satisfaction that thanks to the watchful energy of the Treasurer, Mr. Mahindra, extra income of slightly over Rs. 900 as interest on temporary deposits of liquid cash was obtained during the year.

On the expenditure side Salaries absorbed Rs. 1,085, Taxes Rs. 430, and Donations Rs. 140, more than estimated. Under some other headings appreciable savings were effected.

The excess of ordinary income over ordinary expenditure during the year was Rs. 5,540.

The year's working shows sufficient surplus to provide for the depreciation in rates of our investment securities and after this provision closes with a net surplus of Rs. 5,668-4-3.

The budget estimates for probable expenditure have again been framed so as to meet demands under various heads based on vigorous activity in all departments of the Society's work. The receipts have been conservatively estimated.

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Budget Estimates for 1931.

Ordinary Receipts.

	1930. Estimate.	1930. Actuals.	Budget for 1931.
	Rs.	Rs.	Rs.
Interest on Investments	10,000	9,559	10,500
Interest on Fixed Deposit	....	918	....
Advertising	....	9,600	9,600
Annual Grant	2,000	2,000	2,000
Miscellaneous	500	372	500
Members' Subscriptions	14,500	15,497	14,000
Publications, Sales, and Subscriptions	8,000	8,000	8,000
Proportionate Share from Funds ..	10,000	10,000	10,000
Assam Government Allowance for Publications	....	....	....
Donations	....	250	....
Rent	18,600	9,000	9,300
Refund of Corporation Tax ..	....	1,244	....
Total ..	63,600	66,440	63,900

Ordinary Expenditure.

	Rs.	Rs.	Rs.
Salaries and Allowances	27,000	28,086	29,500
Commission	500	435	500
Stationery	1,000	864	1,000
Fan and Light .. .. Telephone	750	680	750
Taxes	3,000	3,432	2,300
Postage	2,000	1,277	2,000
Freight	100	9	....
Contingencies	1,000	784	850
Petty Repairs	150	72	150
Insurance	500	500	500
Menials' Clothing	200	240	200
Office Furniture	500	499	500
Artistic Possessions	100	....	100
Building Repairs	2,000	2,000	2,000
Provident Fund Share	550	565	600
Audit Fee	250	250	250
Books, Library	2,500	2,535	2,800
Binding, Library	1,500	1,142	1,200
Journal and Memoirs	8,250	6,477	7,250
Printing, Circulars	1,500	912	1,200
Contribution to I.S.C.	250	....	....
Miscellaneous (Legal Fees) ..	....	....	....
Permanent Reserve	10,000	10,000	10,000
Donations	....	142	....
Total ..	63,600	60,901	63,650

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Extraordinary Receipts.

	Rs.	Rs.	Rs.
To Permanent Reserve by Admission Fees ..	1,500	1,280	1,000
by Compounding Fees ..	500	1,024	500
by Institutional Membership Registration Fees ..	....	....	....
To Publications	3,750	..	3,750
TOTAL ..	5,750	2,304	5,250

Extraordinary Expenditure.

	Rs.	Rs.	Rs.
To Permanent Reserve by Admission Fees ..	1,500	1,280	1,000
by Compounding Fees ..	500	1,024	500
by Institutional Membership Registration Fees ..	....	....	....
To Publications	3,750	....	3,750
TOTAL ..	5,750	2,304	5,250

Publications.

Journal. Of the *Journal and Proceedings*, Vol. XXV, for 1929, two numbers were published. These aggregated 390 pages and 34 plates. The title pages and index for volume XXIV were also published.

Memoirs. Of the *Memoirs* one number, Vol. XI, No. 3, was published, containing 16 pages and 7 plates.

Material in hand. A very large amount of material is in hand and in type for both series, to a large extent in an advanced state of preparation.

Indian Science Congress. The *Proceedings* of the 17th Indian Science Congress (580 pages and 3 plates) were also published, as well as a reprint of the *Proceedings* of the 4th Indian Science Congress (88 pages).

Special publications. The Sanskrit MSS. Catalogue, the *Arabic MSS. Catalogue*, and the *Catalogue of printed books in European Languages* in the Society's Library are described elsewhere in the report.

Sales. The sales of publications were satisfactory, though less than the average for the last five years An amount of Rs. 8,242 was realised under this head, a decrease of nearly Rs. 3,500 as compared with the previous record year, yet still a trifle over the budget estimate. The amount received does not take into account publications sent out (for sale or return) to the agents and as yet unsold.

Arrears. The quantity of matter submitted and accepted

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for publication has been growing of late years, a healthy and satisfactory sign. The profusion of material to be dealt with, however, brings with it problems of work. It has not yet been found possible to clear up the arrears in the publication of the *Journal* and this is a task to which next year special attention must be given. The great additional pressure thrown on the office by the ever-increasing size of the annual *Proceedings* of the Science Congress has contributed to the difficulties in the way of speeding up the *Journal*.

Expenditure. Notwithstanding the relatively small amount of matter actually published during the year, the expenditure incurred for it was appreciable, Rs. 6,476. The increase of expenditure on our serial publications is a matter of considerable importance, needing close watching. The above expenditure is exclusive of that relating to the *Bibliotheca Indica* and the *Sanskrit MSS. Catalogue*, or the *Library Catalogue*.

The Baptist Mission Press.

Under the capable superintendence of Mr. P. Knight the Baptist Mission Press continued to act as our chief printers and again gave invaluable assistance and maintained closest co-operation.

Agencies.

Our European and Indian Agents remained the same throughout the year.

Exchange of Publications.

No applications for the exchange of publications were considered during the year. An extension of our exchange list is, however, urgently needed, and the only obstacle in the way is the expenditure involved in additional postage and an increase in the number of copies to be printed. The multiplication of Oriental and scholarly publications is nowadays so rapid that the 190 exchanges on the Society's list do not any longer adequately represent the international scientific movement of our times. Opportunities to extend our exchanges occur unfailingly every year; unhappily, finance prevents us from grasping them.

Meetings.

The Ordinary Meetings of the Society were held regularly every month, with the exception of the recess months of September and October. The time and day of the meetings remained fixed at 5-30 P.M. on the first Monday of the month. The recorded average attendance remained practically the same as that during the previous year, namely, 18 members and

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2 visitors. The maximum attendances were in January and November, each with 25 members and 4 and 7 visitors respectively.

Five meetings of the Medical Section were held during the year.

Exhibits.

In the Ordinary Monthly Meetings a number of exhibits were shown and commented upon by the exhibitors. The following may be mentioned:—

S. L. Hora: Manuscripts of Hamilton Buchanan's "Gangetic Fishes"; The Apodal fish "Apua".

Johan van Manen: A Yarawa bucket and some Yarawa bows and arrows from South Andamans.

Communications.

Apart from papers submitted both for reading and subsequent publication, a number of communications, not intended for subsequent publication, were made from time to time in the Ordinary Monthly Meetings.

Amongst such communications made during the year the following may be mentioned:—

M. Mahfuz-ul Haq: A New illustrated MS. of the Rubā'īyyāt of 'Umar-i-Khaiyyām (in the 'S. Najīb Ashraf Collection' of Al-Istāh Library, Desna, Bihār); two beautiful Porsian MSS. of Jami's Tuhfat-ul-Ahrar and Hatifi's Shirin-u-Khusraw in the Collection of Mr. S. Bashir Ali of Calcutta.

S. L. Hora: Certain Ecological and Biological Observations on the remarkable Blennid Fish—*Andamia hetroptera* (Blkr).

The General Secretary: A Note on the Borojhar Ruins.

General Lectures.

No General Lectures were held during the year. It was decided in future to make preparations for them earlier in the year so as to prevent their being crowded out by pressure of work during the winter season.

Philology.

Six papers which were read in the previous year were published.

No papers read during the year were published.

Papers read in the Monthly Meetings, but not yet published, were:—

G. Tucci: Animadversiones Indicæ.

C. W. Gurner: The psychological simile in Aśvaghoṣa

E. N. Ghosh: Studies on Rig Vedic Deities. I, Pūṣan.

W. Ivanow: Notes on the dialect of Alamut.

Nilmani Chakravarti: The end of Prasenajit, King of Kosala.

Nilmani Chakravarti: An ancient Indian story in a Bengali Vrata-katha.

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Durgacharan Chatterji: A collation of the printed editions of the Sanskrit text of the Nyayabindu and the Nyayabindutika with references to the Tibetan translation.
B. R. Beotra: Gods and Temples in the Suket State.
E. N. Ghosh: Studies on Rig Vedic Deities. II, Rbhus.
E. Elgood: On the significance of Al-Baraz and Al-Bahaq.
Nilmani Chakravarti: Ghoṭakamukha, a Predecessor of Kautilya and Vatsayana.
Sir J. C. Coyajee: The Shahnameh and the Feng-Shen-Yen-I.
E. N. Ghosh: Studies on Rig Vedic Deities. III, Tvaṣṭṛ.
R. R. Haldar: The Chauhans of Nādōl and Jātōr.
S. Krishnaswami Aiyangar: The Kalabhra Interregnum; what it is in South Indian History.
H. Hosten: Letter of Friar Arnold, a German Franciscan in China (1303-05).
H. Hosten: Letter of Friar Peregrine, Second Bishop of Zayton, China (Dec. 30, 1318).
H. Hosten: Chelis, Chincheos (Chorii, Tochari) and Chinese in India, according to Manoel Godinho de Eredia (1613).
J. C. De: Religion and Kingship in ancient times.
Sir J. C. Coyajee: Sraosha Yasht—its place in the history of mysticism.
M. M. Chatterji: The Vedic Divisions.
Jogendra Chandra Ghosh: Was Visakha Datta a Bengali?
H. Hosten: Letters and other papers of Fr. Ippolito Desideri, S.J., a missionary in Tibet (1713–21).
E. N. Ghosh: Studies on Rig Vedic Deities. IV, Trita and Visvarupa.
M. M. Chatterji: Bhagavad Gita and Brahma Sutra.
E. N. Ghosh: Studies on Rig Vedic Deities. V, Dāsas and Asuras killed by Indra.
P. C. Nahar: A Trilingual Inscription from Barhnagar, near Murshidabad.
J. C. Sinha: Jute in early British days.
E. N. Ghosh: Studies on Rig Vedic Deities. VI, Diti and Aditi.
Nilmani Chakravarti: A note on the identity of Jaṃbavati, a wife of Kṛiṣṇa.
A. Banerji-Shastri: Dhenkānāl Grants of Ranastambha and Jayastambha.
Ramaprasad Chanda: Non-Vedic Elements in Brahmanism.
Chintaharan Chakravarti: A note on the Age and Antiquity of the Tantras.
M. Hidayat Hosain and M. Sanaullah: Tadhkirat-ul-'Ulamā.

Natural History: Biology.

One paper read last year was published during the year. No paper read during the current year was published.

Papers read in the Monthly Meetings, but not yet published, were:—

E. Blatter: New species of Indian Plants.
Baini Prashad: Some Reflections on Zoological Research in India.
J. L. Bhaduri: Some notes on the arterial system of the Common Indian Toad *Bufo melanostictus* Schneid.
K. Biswas: Notes on the organisms in the filtered Waters of Calcutta.
A. C. Sen: Studies on Indian Ichneumonidæ I. The external morphology of a Common Ichneumon-fly of India, *Xanthopimpla pedator* Fabricius

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J. L. Bhaduri: Observations on the course of the facial vein and the formation of the external jugular vein in Common Frogs and Toads of Bengal.

M. N. Acharji: A short note on the red-billed Chough, *Pyrrhocorax pyrrhocorax* (Linn).

D. D. Mukherji: Some observations on the Burrowing Toad *Cacopus globulosus*, Günther.

Natural History: Physical Sciences.

Two papers read last year were published this year. No paper read during the current year was published.

Papers read in the Monthly Meetings, but not yet published, were:—

V. V. Sohoni: Some abnormal thunder-storms of Calcutta.

U. N. Brahmachari and J. M. Das-Gupta: Synthesis of a few Antimonials of Therapeutic interest.

Anthropology.

Six papers read last year were published this year.

The following paper was both read and published during the current year:—

B. Chopra: On a "trap-door" fishing trap used in the Myitkina District, U. Burma.

Papers read in the Monthly Meetings, but not yet published, were:—

P. O. Matthai: Marriage Customs among the St. Thomas Christians of Malabar.

H. C. Das-Gupta: On a Type of sedentary game prevalent in the Punjab.

P. C. Mahalanobis: On Tests and Measures of group Divergence.

S. N. Roy: Tattooing in Orissa.

S. T. Moses: The Besthas of Nellore.

Bajra Kumar Chatterji: The social and religious institutions of the Kharias.

Provash Chandra Basu: The social and religious ceremonies of the Chakmas.

Medical Section.

The Medical Section was very active this year and held five meetings, notwithstanding the fact that the unbounded energy of Col. Knowles, the Medical Secretary, was more than usually taxed with work on the publication of an important and extensive memoir on world malaria, on which he terminated his labours only at the end of the year.

Bibliotheca Indica.

Works published. Actually published were two issues, Nos. 1509 and 1510 of an aggregate bulk of 3 fascicle units of 96 and 100 pages. The details are given in Appendix II to this report.

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Of the above, one, the Kāshmīrī Rāmāyaṇa, constituted a complete work.

Indian Works continued. In the Indian Series work was continued on six books as follows :—

1. Ātmatattvaviveka, Sanskrit.
2. Pañca-viṃśa-brāhmaṇa, English translation.
3. Vivādaratnākara, Sanskrit (reprint).
4. Kāshmīrī Dictionary.
5. Pariśiṣṭaparvan, Sanskrit.
6. Dowazangmo, Tibetan.

Islamic Works continued. In the Islamic Series work was continued on five books, as follows :—

1. 'Amal-i-Ṣālih, Persian.
2. Ma'athir-i-Raḥīmī, Persian.
3. Tārīkh-i-Mubārak Shāhi, Persian.
4. Ṭabaqāt-i-Akbari, Persian.
5. Ṭabaqāt-i-Akbari, English translation.

General progress. Owing to the new policy of issuing works in the series in complete volumes only the number of issues published was small, but the work actually performed was very great. The material printed off during the last two years of six of these works represents over 3,000 pages print with a balance of financial liability of over Rs. 13,000.

New works sanctioned. Two new works were sanctioned during the year to be taken up early next year :—

1. Vaikhānasaśrautasūtram, Sanskrit.
2. Tadhkirat-ul-'Ulamā, Persian, with English translation.

Prospects. It is expected that early in the new year at least five volumes will be completed, aggregating about 2,600 printed pages.

Financial. The endeavour, persisted in during the last six years, of completing some of the larger works in hand as speedily as possible has led to great expenditure for the series during that period. The Treasurer has been obliged to draw attention to this fact and has pointed out that the available cash balances for this department are not only depleted, but that the various funds from which the publications have to be paid have been even overdrawn and stand at a debit. A very cautious and careful publication-programme in the near future is therefore called for and we have to cut our coat according to our cloth. With the varied, numerous, and unceasing appeals to the Society to undertake further work in the *Bibliotheca Indica*, of which the scope is truly unlimited, this is a grievous position, which we hope will prove only temporary.

Catalogue of Sanskrit Manuscripts.

MM. Haraprasad Shastri's great undertaking again progressed most satisfactorily during 1930.

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The sixth volume, on grammar and allied subjects, was practically finished by the end of the year and it is expected to have the published volume for exhibition in the Annual Meeting. It contains an elaborate preface running to 340 printed pages and constituting a detailed history of Sanskrit grammar in its various aspects and branches. This preface will also be issued separately as a manual on the subject for the use of students. The volume describes 732 MSS. in 522 pages, exclusive of the preface.

The seventh volume, on Kāvya, is meanwhile well on its way, and has advanced to 192 pages in final page proof. The volume will describe approximately 857 MSS.

During the year the collection of historical MSS. from Rajputana, consisting of about 100 items, was examined by the Pandit and detailed notices of 15 of them have been prepared.

The staff of the department remained unchanged during the year.

Arabic and Persian Manuscripts, Search and Catalogue.

The work in this department was more quiet than of recent years. All accumulated credit balances for the fund had been spent by the beginning of the year and at its end the fund closed with a small debit balance of slightly over Rs. 250. Economy and the husbanding of resources were urgently called for.

The Second Maulvi finished his compilation and final revision of title slips of all printed works in the collection, in Arabic, Persian, and Urdu.

Binding and repairing of previously and newly acquired MSS. were continued and 216 MS. volumes were bound during the year, making a total of over 1,690 bound and repaired since the end of 1924 when this activity was taken up regularly. The result of this sustained endeavour is that the Maulvi was able to report that the end of this work has been practically reached and that henceforth only stray volumes, here and there, will have to be dealt with and that binding *en masse* for the whole collection may be regarded as completed. This is a most satisfactory result of great importance.

During the year 64 volumes of Persian and Arabic MSS. were acquired by purchase at a total cost of about Rs. 215.

One Persian MS. was presented by Mr. K. C. Mahindra.

The work on Mr. Ivanow's Catalogue of the Arabic MSS. in the Society's collections, dealing with their theological portion, progressed to 256 pages printed, and 480 pages in page proof. For the moment further work was left in abeyance. The Council, early in the year, found itself obliged to dispense with the services of Mr. Ivanow, and the occasion was seized to give a rest to the immediate continuation of the work until the

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financial conditions both of the *Bibliotheca Indica* and of the Arabic and Persian Manuscript Fund shall have somewhat improved.

Numismatics.

One Numismatic Supplement, No. XLII (for 1929), was published during the year (78 pages and 5 plates), containing 15 articles.

The following paper was both read and published during the year :—

H. E. Stapleton : A find of 182 silver coins of Kings of the Ḥusainī and Sūrī Dynasties from Raipārā, Thāna Dohar, Dacca Dt., E. Bengal.

The Government of Bengal generously presented the two blocks that illustrate this article.

Summary.

The year 1930 was one in which activity was perhaps greater than the numerical prosperity. The membership decreased by 22, but the total number of Ordinary Members on the roll by the end of the year still remained close on 600, namely, 596. The number of life-members increased from 49 to 52. The Council was active and its Committees performed valuable work. The staff worked well, but the office work continues to present demands beyond the possibility of full discharge by such staff as the Society can at present afford. The correspondence of the year remained very exacting. The many official and ceremonial obligations of the Society were as much as possible attended to and international intellectual relations were fully maintained. The number of distinguished visitors to the Society's rooms during the year was great and varied. The various awards by the Society for scholarly merit were administered with care. Some new awards recently instituted are to have their rules framed. A few historical and artistic objects of value were received as presentations. The library added about 370 volumes to its collections and more than 1,200 volumes were bound. The permanent Library Endowment Fund received no further gifts and its invested corpus remained Rs. 11,000, face value. The financial position of the Society was generally satisfactory. Investments to a face value of Rs. 19,400 were added to the Permanent Reserve Fund. The year's working produced a surplus of about Rs. 5,600. The chief financial problem before the Society remains the strengthening of the Permanent Reserve Fund, not by thousands but by lacs of Rupees. The publication of *Journal* and *Memoirs* during the year progressed somewhat slowly ; but much of what was not actually issued was prepared for early issue in the new year. The monthly meetings conti-

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nued to be of interest and to be well attended. A number of interesting exhibits were shown during the year. No general lectures were given this year. The number of Philological papers presented during the year amounted to thirty-four, an increase of four over the total of the year before. Eight papers on Biology were contributed. One Meteorological paper was received, and also one paper on Physical Science. The new Anthropological papers numbered eight and there was one Numismatic paper. In all, no less than 53 new papers were received, several of considerable length. This constituted a record. The medical section held five meetings. The issues in the *Bibliotheca Indica* were not numerous, aggregating 3 units totalling 286 pages, completing one work. Publication of two new works was sanctioned. The matter in preparation, however, is very considerable, representing over 3,000 pages already printed off, of which probably 2,600 will become ready for issue early in the next year. No further cataloguing of MSS. in the Arabic and Persian section was undertaken during the year, but one further volume of the Catalogue of Sanskrit MSS. was completed. The binding of the collection of Persian and Arabic MSS. was continued, and 216 further volumes bound during the year completed this undertaking, making a total of nearly 1,700 volumes bound during the last six years. 64 new volumes of Arabic and Persian MSS. were added to the Society's collections.

The year under review was a successful and active one. The output of work in all directions has been great in quantity and valuable in quality. Members and Officers worked harmoniously together in a spirit of zealous enthusiasm, thanks to which the Society's scholarly and social prestige was fully maintained.

We have all reasons to be satisfied with the year that lies behind us, but in looking forward we realise that the scope of our studies is of unlimited variety and extent. Love of learning, zeal in labour, and skill in application are all called for in the performance of the functions for which our ancient Society exists. Though the road is never-ending we may recall the Chinese proverb: 'the highest towers rise from the ground; the longest journeys are made only step by step'.

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[APPENDIX I.]

Membership Statistics.

(As calculated for December 31st, for 30 years.)

YEAR.	ORDINARY.								EXTRA-ORDINARY.				Grand Total Membership.	FELLOWS.	
	PAYING.				NON-PAYING.			Total Ordinary Members.	Centenary Honorary.	Associate.	Institutional.	Total.		Honorary.	Ordinary.
	Resident.	Non-Resident.	Foreign.	Total.	Absent.	Life.	Total.								
1901 ..	123	133	13	269	37	22	59	328	4	12	..	16	344	26	..
1902 ..	126	126	14	266	47	21	67	333	4	13	..	17	350	26	..
1903 ..	127	126	15	268	46	21	67	335	4	13	..	17	352	24	..
1904 ..	132	130	14	276	46	21	67	343	4	13	..	17	360	30	..
1905 ..	144	133	12	288	48	20	68	356	4	13	..	17	373	29	..
1906 ..	173	147	15	335	52	20	72	407	4	12	..	16	423	30	..
1907 ..	174	175	20	369	31	20	51	420	4	12	..	16	436	28	..
1908 ..	181	193	17	391	38	19	57	448	4	13	..	17	465	30	..
1909 ..	183	217	13	413	40	20	60	473	4	14	..	18	491	28	..
1910 ..	209	217	16	442	43	23	66	508	4	14	..	18	526	27	17
1911 ..	200	225	19	444	53	22	75	519	3	14	..	17	536	28	19
1912 ..	203	229	19	451	43	23	66	517	3	13	..	16	533	27	24
1913 ..	200	211	19	430	46	23	69	499	3	14	..	17	516	27	28
1914 ..	191	187	19	397	50	26	76	473	3	14	..	17	490	24	27
1915 ..	171	188	21	380	40	25	65	445	3	15	..	18	463	29	31
1916 ..	145	159	18	322	60	25	85	407	3	15	..	18	425	26	33
1917 ..	150	144	15	309	45	24	69	378	2	12	..	14	392	22	35
1918 ..	153	145	17	315	43	24	67	382	2	10	..	12	394	22	39
1919 ..	141	128	15	284	64	25	89	373	2	11	..	13	386	18	36
1920 ..	161	134	15	310	32	26	58	368	2	11	..	13	381	28	38
1921 ..	160	132	16	308	26	26	51	359	2	12	..	14	373	28	40
1922 ..	160	141	16	317	26	26	52	369	2	13	..	15	384	30	39
1923 ..	147	120	13	280	30	27	57	337	2	11	..	13	350	28	37
1924 ..	209	134	12	355	29	28	57	412	2	12	..	14	426	27	37
1925 ..	263	137	12	412	23	27	50	462	2	12	..	14	476	26	34
1926 ..	319	162	20	501	23	28	51	552	2	12	..	14	566	25	34
1927 ..	328	167	18	513	28	33	61	574	2	13	..	15	589	28	38
1928 ..	344	167	23	534	42	46	88	622	1	12	..	13	635	28	40
1929 ..	331	181	21	533	36	49	85	618	1	10	2	13	631	27	43
1930 ..	291	194	37	522	22	52	74	596	1	8	2	11	607	29	47

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[APPENDIX II.]

List of Publications issued by the Asiatic Society of Bengal during 1930.

(a) Bibliotheca Indica (New Series) :

	Price Rs.	A.	P.
No. 1509: Kāshmīrī Rāmāyana, Text and English translation (2 units)	2	8	0
No. 1510: 'Amal-i-Ṣālih, Vol. III, Fasc. 2, Text (1 unit)	1	0	0

(b) Memoirs :

Vol. XI, No. 3: The Palæography of the Hathigumpha and the Nanaghat Inscriptions ..	4	8	0

(c) Journal and Proceedings (New Series) :

Vol. XXV.			
No. 1	18	6	0
No. 2	3	12	0

Title page and Index for Vol. XXIV. (Free to Members and Subscribers.)

(d) Miscellaneous :

Proceedings, Fourth Indian Science Congress (reprint) ..	2	4	0
Proceedings, Seventeenth Indian Science Congress ..	15	0	0

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[APPENDIX III]

Abstract Statement

of

Receipts and Disbursements

of the

Asiatic Society of Bengal

for

the Year 1930

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STATEMENT No. 1.

1930. *Asiatic Society*

Dr.

	Rs. As. P.	Rs. As. P.
To Establishment.		
Salaries and Allowances	28,085 12 9	
Commission	434 11 6	
		28,520 8 3
To Contingencies.		
Stationery	863 8 0	
Fan and Light	436 6 6	
Telephone	243 7 1	
Taxes	3,431 9 0	
Postage	1,277 2 0	
Freight	8 8 0	
Contingencies	783 14 6	
Audit Fee	250 0 0	
Petty Repairs	71 10 3	
Insurance	500 0 0	
Menials' Clothing	240 0 0	
Furniture	499 0 0	
Donation	141 15 6	
Printing Circulars, etc.	911 9 0	
		9,658 9 10
To Library and Collections.		
Books	2,535 2 5	
Binding	1,142 2 0	
		3,677 4 5
To Publications.		
Journal and Proceedings and Memoirs ..	6,476 11 6	
		6,476 11 6
To Contributions.		
Provident Fund Contribution for 1930	564 15 0	
		564 15 0
Building Repair Fund Account		2,000 0 0
To Sundry Adjustments.		
Bad Debts written-off		1,167 10 9
Depreciation on Investments revalued on 31-12-30		12,215 1 0
Balance as per Balance Sheet		1,79,408 8 2
Total ..		2,43,689 4 11

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STATEMENT No. 1.

of Bengal. *1930.*

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		1,73,740 3 11
By Cash Receipts.		
Advertising	9,600 0 0	
Interest on Investments	9,559 5 0	
Interest on Fixed Deposits ..	918 1 6	
Miscellaneous	372 2 0	
Government Allowance	2,000 0 0	
Donation	250 0 0	
Rent	9,000 0 0	
Refund of Corporation Tax ..	1,244 2 0	
		32,943 10 6
By Personal Account.		
Members' Subscriptions	16,681 12 0	
Compounding Subscriptions ..	1,024 0 0	
Admission Fees	1,280 0 0	
Miscellaneous	19 10 6	
		19,005 6 6
By Transfer from Funds.		
Proportionate Share in General Expenditure by various Funds	10,000 0 0	
Publication Fund for Publications ..	8,000 0 0	
		18,000 0 0
Total ..		2,43,689 4 11

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STATEMENT No. 2.

1930. *Oriental Publication*

From a monthly grant made by the Government of Bengal for the publi-
(Rs. 500), and for the publication of Sanskrit

Dr.

	Rs. As. P.	Rs. As. P.
To Balance from last Account		3,755 3 10
To Cash Expenditure.		
Freight	68 10 0	
Printing	1,439 4 0	
Editing	1,590 12 0	
Cataloguing	275 0 0	
		3,373 10 0
To Proportionate Share in General Expenditure		3,000 0 0
Total ..		10,128 13 10

STATEMENT No. 3.

1930. *Oriental Publication*

From a monthly grant made by the Government of Bengal of
Historical

Dr.

To Cash Expenditure.

	Rs. As. P.	Rs. As. P.
Printing	4,882 9 3	
Editing	300 0 0	
		5,182 9 3
To Balance as per Balance Sheet ..	..	1,323 5 9
Total ..		6,505 15 0

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STATEMENT No. 2.

Fund, No. 1, in Account with A.S.B. *1930.*

cation of Oriental Works and Works of Instruction in Eastern Languages Works hitherto unpublished (Rs. 250).

Cr.

By Cash Receipts.

	Rs. As. P.	Rs. As. P.
Annual Grant		9,000 0 0
By Balance as per Balance Sheet		1,128 13 10
Total ..		10,128 13 10

STATEMENT No. 3.

Fund, No. 2, in Account with A.S.B. *1930.*

Rs. 250 for the publication of Arabic and Persian Works of Interest.

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		505 15 0
By Cash Receipts.		
Annual Grant for 1929-30 and 1930-31 ..		6,000 0 0
Total ..		6,505 15 0

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STATEMENT No. 4.

1930. *Sanskrit Manuscripts Fund*

From an annual grant of Rs. 3,200 made by the Government of Bengal by the Society ; and Rs. 3,600 from the

Dr.

To Cash Expenditure.

	Rs. As. P.	Rs. As. P.
Pension	120 0 0	
Allowance	3,600 0 0	
		3,720 0 0
To Proportionate Share in General Expenditure		2,000 0 0
To Balance as per Balance Sheet		18,016 13 3
Total ..		23,736 13 3

STATEMENT No. 5.

1930. *Arabic and Persian Manuscripts*

From an annual grant of Rs. 5,000 made by the Government of India for by the Society ; for the purchase of further Manuscripts, Manuscripts found in

Dr.

	Rs. As. P.	Rs. As. P.
To Balance from last Account		5,751 1 3
To Cash Expenditure.		
Manuscripts Purchase	214 8 0	
Binding	411 4 0	
Cataloguing	1,375 0 0	
		2,000 12 0
To Proportionate Share in General Expenditure		2,500 0 0
Total ..		10,251 13 3

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STATEMENT No. 4.

Account, in Account with A.S.B. *1930.*

for the publication of the Catalogue of Sanskrit Manuscripts acquired same Government for research work.

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		16,936 13 3
By Cash Receipts.		
Annual Grant for Research work, 1930-31	3,600 0 0	
Annual Grant for Cataloguing, 1930-31..	3,200 0 0	
		6,800 0 0
Total ..		23,736 13 3

STATEMENT No. 5.

Fund Account, in Account with A.S.B. *1930.*

the cataloguing and binding of Arabic and Persian Manuscripts, acquired and for the preparation of notices of Arabic and Persian various Libraries in India.

Cr.

By Cash Receipts.

	Rs. As. P.	Rs. As. P.
Government Allowance for 1929-30 and 1930-31		10,000 0 0
By Balance as per Balance Sheet		251 13 3
Total ..		10,251 13 3

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STATEMENT No. 6.

1930. *Barclay Memorial*

From a sum of Rs. 500 odd given in 1896 by the Surgeon encouragement of Medical

Dr.

To Cash Expenditure.

	Rs. As. P.	Rs. As. P.
Cost of one Memorial Medal ..	..	16 6 0
To Depreciation Investments revalued on 31-12-30	..	27 6 0
To Balance as per Balance Sheet—		
Rs. 400 3½% G.P. Notes, 1854-55 }		
„ 100 „ „ 1900-01 }	380 10 0	
„ 100 „ „ 1865 }		
Accumulated Cash Balance ..	94 10 8	
		475 4 8
Total ..		519 0 8

STATEMENT No. 7.

1930. *Servants' Pension Fund*

Founded in 1876 as the Piddington Pension Fund

Dr.

	Rs. As. P.	Rs. As. P.
To Depreciation Investments revalued on 31-12-30	..	91 4 0
To Balance as per Balance Sheet—		
Rs. 2,000, 3½% G.P. Notes ..	1,268 12 0	
Accumulated Cash Balance ..	334 9 1	
		1,603 5 1
Total ..		1,694 9 1

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STATEMENT No. 6.

Fund Account, in Account with A.S.B. *1930.*

General, I.M.S., for the foundation of a medal for the and Biological Science.

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		499 12 8
By Cash Receipts.		
Interest realized during the year		19 4 0
Total ..		519 0 8

STATEMENT No. 7.

Account, in Account with A.S.B. *1930.*

with Rs. 500 odd from the Piddington Fund.

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		1,624 9 1
By Cash Receipts.		
Interest realized during the year		70 0 0
Total ..		1,694 9 1

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STATEMENT No. 8.

1930. *Building Fund*

From a sum of Rs. 40,000 given by the Government of India proceeds of a portion

Dr.

		Rs. As. P.	Rs. As. P.
To Depreciation Investments revalued on 31-12-30	..		593 2 0
To Balance as per Balance Sheet—			
Rs. 13,000/- 3½% G.P. Notes @ Rs. 63/7/- as on 31-12-30		8,246 14 0	
Accumulated Cash Balance ..		2,877 6 6	
			11,124 4 6
	TOTAL ..		11,717 6 6

STATEMENT No. 9.

1930. *Catalogue of Scientific Serial Pub-*

Dr.

		Rs. As. P.
To Balance as per Balance Sheet		415 0 0
	TOTAL ..	415 0 0

STATEMENT No. 10.

1930. *International Catalogue of Scien-*

Dr.

		Rs. As. P.
To Balance as per Balance Sheet		4,424 7 8
	TOTAL ..	4,424 7 8

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STATEMENT No. 8.

Account, in Account with A.S.B. *1930.*

towards the rebuilding of the Society's premises, and from the sale of the Society's land.

Cr.

		Rs. As. P.	Rs. As. P.
By Balance from last Account	..	..	11,262 6 6
By Cash Receipts.			
Interest realized for the year	..		455 0 0
Total	..		11,717 6 6

STATEMENT No. 9.

lications, Calcutta, in Account with A.S.B. *1930.*

Cr.

			Rs. As. P.
By Balance from last Account	..	..	415 0 0
Total	..		415 0 0

STATEMENT No. 10.

tific Literature, in Account with A.S.B. *1930.*

Cr.

			Rs. As. P.
By Balance from last Account	..	..	4,424 7 8
Total	..		4,424 7 8

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STATEMENT No. 11.

1930. *Akbarnama Reprint*

From a sum set apart in 1923 for

Dr.

	Rs.	As.	P.
To Balance as per Balance Sheet	7,764	10	8
TOTAL ..	7,764	10	8

STATEMENT No. 12.

1930. *Publication Fund*

From sale proceeds

Dr.

To CASH EXPENDITURE.

	Rs.	As.	P.	Rs.	As.	P.
Printing	..			2,819	10	8
To Proportionate Share in General Expenditure	2,500	0	0			
To Publications of the A.S.B. ..	8,000	0	0			
To Books returned, etc.	106	14	0			
				10,606	14	0
To Balance as per Balance Sheet ..	..			6,156	6	9
TOTAL ..				19,582	15	5

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STATEMENT No. 11.

Account, in Account with A.S.B. *1930.*

the reprint of the Akbarnama in England.

Cr.

	Rs. As. P.
By Balance from last Account	7,764 10 8
TOTAL ..	7,764 10 8

STATEMENT No. 12.

Account, in Account with A.S.B. *1930.*

of publications.

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		11,141 14 8
BY CASH RECEIPTS.		
Cash Sales of Publications		397 13 9
BY PERSONAL ACCOUNT.		
Credit Sales of Publications ..	6,274 4 9	
Subscriptions to Journal and Proceedings	1,524 0 0	
Institutional Members' Subscriptions ..	48 0 0	
		7,846 4 9
By Interest on Fixed Deposit, London	150 0 0	
By Exchange difference	46 14 3	
		196 14 3
TOTAL ..		19,582 15 5

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STATEMENT No. 13.

1930. *Provident Fund Ac-*

From contributions by the

Dr.

To Cash Expenditure.

	Rs. As. P.	Rs. As. P.
Purchase of Investments	4,849 6 4	
Cost of Stamp	0 1 0	
		4,849 7 4
To Depreciation Investments revalued on 31-12-30	..	250 0 0
To Balance as per Balance Sheet—		
Rs. 5,000, 4½% G.P. Notes ..	4,750 0 0	
Accumulated Cash Balance ..	2,122 12 0	
		6,872 12 0
Total ..		11,972 3 4

STATEMENT No. 14.

1930. *Sir William Jones Memorial*

From a sum gifted for the purpose in

Dr.

To Cash Expenditure.

	Rs. As. P.	Rs. As. P.
To Depreciation Investments revalued on 31-12-30	..	136 14 0
To Balance as per Balance Sheet—		
Rs. 3,000, 3½% G.P. Notes ..	1,903 2 0	
Accumulated Cash Balance ..	193 15 0	
		2,097 1 0
Total ..		2,233 15 0

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STATEMENT No. 13.

ount, in Account with A.S.B. *1930.*

Society and its Staff.

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		5,602 2 5
By Cash Receipts.		
Staff Contribution for the year ..	564 15 0	
A.S.B. Contribution for the year ..	564 15 0	
Interest on Investments realized during the year	101 1 0	
Interest on Advance	6 15 3	
Purchase of Investments credited at Face Value	5,000 0 0	
		6,237 14 3
Interest realized for 1929, from Imperial Bank of India		132 2 8
Total ..		11,972 3 4

STATEMENT No. 14.

Fund Account, in Account with A.S.B. *1930.*

1926, by Dr. U. N. Brahmachari.

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		2,134 8 0
By Cash Receipts.		
Interest realized for the year		99 7 0
Total ..		2,233 15 0

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STATEMENT No. 15.

1930. *Annandale Memorial Fund*

From donations by subscription,

Dr.

	Rs. As. P.	Rs. As. P.
To Depreciation Investments revalued on 31-12-30		136 14 0
To Balance as per Balance Sheet—		
Rs. 3,000, 3½% G.P. Notes ..	1,903 2 0	
Accumulated Cash Balance ..	621 6 0	
		2,524 8 0
TOTAL ..		2,661 6 0

STATEMENT No. 16.

1930. *Permanent Library Endowment*

From gifts received,

Dr.

	Rs. As. P.	Rs. As. P.
To Depreciation Investments revalued on 31-12-30		501 14 0
To Balance as per Balance Sheet—		
Rs. 11,000, 3½% G.P. Notes ..	6,978 2 0	
Accumulated Cash Balance ..	523 8 5	
		7,501 10 5
TOTAL ..		8,003 8 5

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STATEMENT No. 15.

Account, in Account with A.S.B. *1930.*

started in 1926.

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		2,561 13 0
By Cash Receipts.		
Interest realized for the year		99 9 0
Total ..		2,661 6 0

STATEMENT No. 16.

Fund Account, in Account with A.S.B. *1930.*

started in 1926.

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		7,637 11 5
By Cash Receipts.		
Interest realized for the year		365 13 0
Total .		8,003 8 5

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STATEMENT No. 17.

1930. *Calcutta Science Congress Prize*

From a sum gifted for the purpose by

Dr.

		Rs. As. P.	Rs. As. P.
To Depreciation Investments revalued on 31-12-30	..		136 14 0
To Balance as per Balance Sheet—			
Rs. 3,000, 3½% G.P. Notes ..		1,903 2 0	
Accumulated Cash Balance ..		150 15 7	
			2,054 1 7
TOTAL ..			2,190 15 7

STATEMENT No. 18.

1930. *Dr. Brühl Memorial*

From a sum gifted for the purpose by

Dr.

		Rs. As. P.	Rs. As. P.
To Depreciation Investments revalued on 31-12-30	..		45 10 0
To Balance as per Balance Sheet—			
Rs. 1,000, 3½% G.P. Notes ..		634 6 0	
Accumulated Cash Balance ..		248 14 0	
			883 4 0
TOTAL ..			928 14 0

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STATEMENT No. 17.

Fund Account, in Account with A.S.B. 1930.

the Local Committee, Indian Science Congress, Calcutta, 1928.

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		2,091 6 7
By Cash Receipts.		
Interest realized for the year		99 9 0
Total ..		2,190 15 7

STATEMENT No. 18.

Fund Account, in Account with A.S.B. 1930.

the Brühl Farewell Committee, 1929.

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		895 11 0
By Cash Receipts.		
Interest realized for the year		33 3 0
Total ..		928 14 0

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STATEMENT No. 19.

1930. *Joy Gobind Law Memorial*

From a donation for the purpose

Dr.

To Cash Expenditure.

	Rs. As. P.	Rs. As. P.
Cost of one Memorial Medal and Dies ..	..	528 6 0
To Depreciation Investments revalued on 31-12-30	..	136 14 0
To Balance as per Balance Sheet—		
Rs. 3,000, 3½% G.P. Notes ..	1,903 2 0	
Less Cash Advance	213 0 0	
		1,690 2 0
Total ..		2,355 6 0

STATEMENT No. 20.

1930. *Advances*

Dr.

	Rs. As. P.
To Balance from last Account	390 0 0
Total ..	390 0 0

STATEMENT No. 21.

1930. *Current Deposit Account, Chartered Bank of*

From a sum set aside to pay for the

Dr.

	Rs. As. P.	Rs. As. P.
To Balance from last Account ..	..	6,894 12 8
To Interest on Fixed Deposit, London	150 0 0	
To Exchange difference	46 14 3	
		196 14 3
Total ..		7,091 10 11

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STATEMENT No. 19.

Fund Account, in Account with A.S.B. *1930.*

by Dr. Satya Churn Law, 1929.

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		2,255 13 0
By Cash Receipts.		
Interest realized for the year		99 9 0
Total ..		2,355 6 0

STATEMENT No. 20.

Account, in Account with A.S.B. *1930.*

Cr.

By Cash Receipts.

	Rs. As. P.
Return of advances	140 0 0
By Balance as per Balance Sheet	250 0 0
Total ..	390 0 0

STATEMENT No. 21.

India, Australia and China, London. *1930.*

printing of the Kashmiri Dictionary.

Cr.

	Rs. As. P.	Rs. As. P.
By withdrawals		2,819 10 8
By Balance as per Balance Sheet		4,272 0 3
Total ..		7,091 10 11

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STATEMENT No. 22.

1930. *Building Repair*

Dr.

	Rs.	As.	P.
To Balance as per Balance Sheet	2,000	0	0
TOTAL ..	2,000	0	0

STATEMENT No. 23.

1930. *Personal*

Dr.

	Rs.	As.	P.	Rs.	As.	P.
To Balance from last Account ..	..			4,194	11	6
To Advances	..			803	10	3
Asiatic Society's Subscriptions, etc. ..	19,005	6	6			
Subscriptions to Journal and Proceedings and from Book Sales, etc., from Publication Fund	7,846	4	9			
				26,851	11	3
TOTAL ..				31,850	1	0

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STATEMENT No. 22.

Fund Account, in Account with A.S.B. *1930.*

Cr.

		Rs. As. P.
By Transfer received from the A.S.B. ..	..	2,000 0 0
TOTAL	..	2,000 0 0

STATEMENT No. 23.

Account. *1930.*

Cr.

		Rs. As. P.	Rs. As. P.
By Cash Receipts during the year	..	..	26,160 11 6
By Bad Debts written off, A.S.B. Account		1,167 10 9	
By Bad Debts written off, Publication Fund Account	.. ..	106 14 0	
			1,274 8 9

By Outstandings.	Amount due to the Society.			Amount due by the Society.		
	Rs.	As.	P.	Rs.	As.	P.
Members ..	4,084	5	0	416	1	0
Subscribers ..	...	...	..	60	0	0
Institutional Members	...	...		24	0	0
Bill Collector's Deposit ...	..		.	150	0	0
Advances to Staff	115	0	0	..	.	.
Miscellaneous ..	1,140	10	0	275	1	3
	5,339	15	0	925	2	3

By Balance ..		4,414 12 9
TOTAL	..	31,850 1 0

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STATEMENT No. 24.

1930. *(1) Investment Account*

Dr.

	Rs. As. P.	Rs. As. P.
To Balance from last Account ..	..	5,212 2 5
To deposits of Contributions, during the year	1,230 15 0	
To deposit of Interest on Advance ..	6 15 3	
To deposit of Advances returned ..	140 0 0	
		1,377 14 3
To Interest realized for the year 1929 ..	..	132 2 8
TOTAL ..		6,722 3 4

STATEMENT No. 25.

1930. *(2) Investment Account*

Dr.

	Rs. As. P.
To Balance from last Account	10,000 0 0
TOTAL ..	10,000 0 0

STATEMENT No. 26.

1930. *(3) Investment Account*

Dr.

To CASH EXPENDITURE.

	Rs. As. P.
Fixed Deposits	57,875 2 3
TOTAL ..	57,875 2 3

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STATEMENT No. 24.

(*Savings Bank Deposit, Imperial Bank of India*). *1930.*

Cr.

	Rs. As. P.	Rs. As. P.
By withdrawal of Deposits for purchase of Investments	4,849 6 4	
Bank Charges	0 1 0	
		4,849 7 4
By Balance as per Balance Sheet ..	..	1,872 12 0
TOTAL ..		6,722 3 4

STATEMENT No. 25.

(*Fixed Deposit, Imperial Bank of India*). *1930.*

Cr.

	Rs. As. P.
By withdrawal of Deposit	10,000 0 0
TOTAL ..	10,000 0 0

STATEMENT No. 26.

(*Fixed Deposit, with Central Bank of India*). *1930.*

Cr.

BY CASH RECEIPTS.

	Rs. As. P.
Withdrawal of Deposits	20,021 3 6
By Balance as per Balance Sheet	37,853 14 9
TOTAL ..	57,875 2 3

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STATEMENT No. 27.

1930. *(4) Investment*

Dr.

	Rs.	As.	P.	Rs.	As.	P.
To Balance from last Account ..	3,10,200	0	0	2,99,106	3	10
To Purchase of Investments for the Provident Fund Account.. ..	5,000	0	0	5,000	0	0
TOTAL ..	3,15,200	0	0	3,04,106	3	10

Face Value Rs.	FUNDS.	Rate @ Rs. %	31st December, 1930, Valuation. Rs.	A.	P.	Valuation as per Individual Account. Rs.	A.	P.	Less Depreciation on 31st December, 1930. Rs.	A	P.
	ASIATIC SOCIETY OF BENGAL.										
	PERMANENT RESERVE.										
16,700	3½% G. Loan No. 155119, 1842-43	63/7/-									
1,00,000	3½% G. Loan No. 216811, 1854-55	63/7/-									
53,700	3½% G. Loan No. 216812, 1854-55 ..	63/7/-									
5,000	3½% G. Loan No. 029544, 1879 ..	63/7/-									
1,000	3½% G. Loan No. 029548, 1879 ..	63/7/-	1,43,069	1	0	2,14,506	13	10	71,437	12	10
44,300	3½% G. Loan No. 337428, 1865 ...	63/7/-									
4,400	3½% G. Loan Part of No. 238369, 1900-01	63/7/-									
500	3% G. Loan No. 093715, 1896-97	54/4/-									
	TEMPORARY RESERVE.										
20,000	3½% G. Loan Part of No. 238369, 1900-01	63/7/-									
26,000	3½% G. Loan No. 238816, 1900-01 ...	63/7/-	39,045	4	0	58,129	0	0	19,083	12	0
11,400	4½% G. Loan, 1955-60	83 3/-									
	PENSION FUND.										
2,000	3½% G. Loan No. 029546, 1879 ...	63/7/-	1,268	12	0	1,870	6	0	601	10	0
	BARCLAY MEMORIAL FUND.										
300	3½% G. Loan No. 170971, 1854-55 ..	63/7/-									
100	3½% G. Loan No. 220763, 1854-55 ...	63/7/-									
100	3½% G. Loan No. 304677, 1900-01 ..	63/7/-	380	10	0	600	0	0	219	6	0
100	3½% G. Loan No. 354795, 1865 ..	63/7/-									
	SIR WILLIAM JONES MEMORIAL FUND.										
1,500	3½% G. Loan, 1854-55	63/7/-									
1,500	3½% G. Loan, 1900-01	63/7/-	1,903	2	0	3,000	0	0	1,096	14	0
	ANNANDALE MEMORIAL FUND.										
3,000	3½% G. Loan, 1842-43	63/7/-	1,903	2	0	3,000	0	0	1,096	14	0
	PERMANENT LIBRARY ENDOWMENT FUND.										
5,000	3½% G. Loan No 230065, 1854-55 ..	63/7/-									
2,000	3½% G. Loan No. 231119, 1854-55 ...	63/7/-									
1,000	3½% G. Loan No. 234698, 1854-55 ...	63/7/-	6,978	2	0	11,000	0	0	4,021	14	0
3,000	3½% G. Loan Nos. 235353-55, 1854-55	63/7/-									
	CALCUTTA SCIENCE CONGRESS PRIZE FUND.										
3,000	3½% G. Loan No. 235851, 1854-55 ...	63/7/-	1,903	2	0	3,000	0	0	1,096	14	0
	DR. BRÜHL MEMORIAL FUND.										
1,000	3½% G. Loan No. 235843, 1854-55 ...	63/7/-	634	6	0	1,000	0	0	365	10	0
	JOY GOBIND LAW MEMORIAL MEDAL FUND.										
1,000	3½% G. Loan No. 213534, 1854-55 ..	63/7/-									
1,000	3½% G. Loan No. 213535, 1854-55 ...	63/7/-									
500	3½% G. Loan No. 213536, 1854-55 ...	63/7/-	1,903	2	0	3,000	0	0	1,096	14	0
500	3½% G. Loan No. 219673, 1854-55 ..	63/7/-									
	PROVIDENT FUND ACCOUNT.										
5,000	4½% G. Loan 1934	95/-/-	4,750	0	0	5,000	0	0	250	0	0
3,15,200			2,63,738	11	0	3,04,106	3	10	1,00,367	8	10

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STATEMENT No. 27.

Account (*Government Securities*). *1930.*

Cr.

		Rs.	As.	P.	Rs.	As.	P.
By Balance as per Balance Sheet	..	3,15,200	0	0	2,03,738	11	0
Less Depreciation on Investments re-valued on 31st December, 1930	..	..			1,00,367	8	10
TOTAL	..	3,15,200	0	0	3,04,106	3	10

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STATEMENT No. 28.

1930. *Cash*

For the year to 31st

Dr.

To	Rs.	As.	P.	Rs.	As.	P.
Balance from last Account	..			2,286	7	2
Asiatic Society of Bengal	32,943	10	6			
Oriental Publication Fund No. 1 Account	9,000	0	0			
Oriental Publication Fund No. 2 Account	6,000	0	0			
Sanskrit Manuscripts Fund Account ..	6,800	0	0			
Arabic and Persian Manuscripts Fund Account	10,000	0	0			
Barclay Memorial Fund Account ..	19	4	0			
Servants' Pension Fund Account ..	70	0	0			
Building Fund Account	455	0	0			
Publication Fund Account	397	13	9			
Provident Fund Account	6,237	14	3			
Sir William Jones Memorial Fund Account	99	7	0			
Annandale Memorial Fund Account ..	99	9	0			
Permanent Library Endowment Fund Account	365	13	0			
Calcutta Science Congress Prize Fund Account	99	9	0			
Dr. Brühl Memorial Fund Account ..	33	3	0			
Joy Gobind Law Memorial Fund Account	99	9	0			
Advances Account	140	0	0			
Fixed Deposit, Central Bank of India, Account	20,021	3	6			
Deposit Account, Chartered Bank of India, Australia, and China ..	2,819	10	8			
Savings Bank Deposit Account, Imperial Bank of India	4,849	7	4			
Fixed Deposit Account, Imperial Bank of India, Calcutta	10,000	0	0			
Personal Account	26,160	11	6			
				1,36,711	13	6
TOTAL ..				1,38,998	4	8

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STATEMENT No. 28.

Account. *1930.*

December, 1930.

Cr.

By	Rs.	As.	P.	Rs.	As.	P.
Asiatic Society of Bengal	48,898	1	0			
Oriental Publication Fund No. 1 Account	3,373	10	0			
Oriental Publication Fund No. 2 Account	5,182	9	3			
Sanskrit Manuscripts Fund Account ..	3,720	0	0			
Arabic and Persian Manuscripts Fund Account	2,000	12	0			
Barclay Memorial Fund Account ..	16	6	0			
Publication Fund Account	2,819	10	8			
Provident Fund Account	4,849	7	4			
Joy Gobind Law Memorial Fund Account	528	6	0			
Fixed Deposit, Central Bank of India Account	57,875	2	3			
Savings Bank Deposit Account, Imperial Bank of India	1,377	14	3			
Investment Account	5,000	0	0			
Personal Account	803	10	3			
				1,36,445	9	0
Balance	..			2,552	11	8
TOTAL ..				1,38,998	4	8

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STATEMENT No. 29.

1930. *Balance* As at 31st

LIABILITIES.

	Rs.	As.	P.	Rs.	As.	P.
Asiatic Society of Bengal	1,79,408	8	2			
Oriental Publication Fund No. 2 Account	1,323	5	9			
Sanskrit Manuscripts Fund Account ..	18,016	13	3			
Barclay Memorial Fund Account ..	475	4	8			
Servants' Pension Fund Account ..	1,603	5	1			
Building Fund Account	11,124	4	6			
Catalogue of Scientific Serial Publications (Calcutta)	415	0	0			
International Catalogue of Scientific Literature (London)	4,424	7	8			
Akbarnama Reprint Account ..	7,764	10	8			
Publication Fund Account	6,156	6	9			
Provident Fund Account	6,872	12	0			
Sir William Jones Memorial Fund Account	2,097	1	0			
Annandale Memorial Fund Account ..	2,524	8	0			
Permanent Library Endowment Fund Account	7,501	10	5			
Calcutta Science Congress Prize Fund Account	2,054	1	7			
Dr. Brühl Memorial Fund Account ..	883	4	0			
Joy Gobind Law Memorial Fund Account	1,690	2	0			
Building Repair Fund Account ..	2,000	0	0			
				2,56,335	9	6
TOTAL ..				2,56,335	9	6

We have examined the above Balance Sheet and the appended detailed accounts with the Books and Vouchers presented to us and certify that they are in accordance therewith, and set forth correctly the position of the Society as at 31st December, 1930.

PRICE, WATERHOUSE, PEAT & Co.,
Auditors,
Chartered Accountants.

Calcutta,
7th February, 1931.

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STATEMENT No. 29.

Sheet. *1930.*

December, 1930.

ASSETS.

	Rs. As. P.	Rs. As. P.
Oriental Publication Fund No. 1 Account	1,128 13 10	
Arabic and Persian Manuscripts Fund Account	251 13 3	
Personal Account	4,414 12 9	
Advances Account	250 0 0	
		6,045 7 10
Investment Account	..	2,03,738 11 0
Savings Bank Deposit Account, Imperial Bank of India	..	1,872 12 0
Current Deposit Account, Chartered Bank (London)	4,272 0 3	
Fixed Deposit Account, Central Bank of India (Calcutta)	37,853 14 9	
		42,125 15 0
Cash and Bank Balance	..	2,552 11 8
TOTAL ..		2,56,335 9 6

K. C. MAHINDRA,
Honorary Treasurer.

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[APPENDIX IV.]

Abstract Proceedings Council, 1930.

(Rule 48 f.)

AGENCIES—

Recommendations, Finance Committee No. 9 of 19-11-30. Accounts Messrs. Luzac & Co. Send letter by Air Mail asking for accounts to date and remittance before the end of the year. Accepted by Council.
No. 19.
24-11-30.

ANNUAL MEETING—

Annual Report. Approved.
No. 13.
27-1-30.

Arrangements Annual Meeting, 1930. Approved.
No. 14.
27-1-30.

Annual Meeting. H.E. the Governor of Bengal to be invited to be present and preside over the Meeting.
No. 13.
27-10-30.

Reply from the Private Secretary to H.E. The Governor of Bengal to the invitation to preside over the Society's next Annual Meeting. Record.
No. 1.
24-11-30.

ASSOCIATE MEMBERS—

Request from Mr. G. P. Majumdar to be elected as an Associate Member of the Society. Decline.
No. 4.
27-1-30.

BIBLIOTHECA INDICA—

Publication Committee No. 13 of 28-4-30.
List of outstanding works of the Bibliotheca Indica. Recommendation: A Sub-Committee consisting of the following: Mr. B. B. Ghose (Chairman), Philological Secretary, Jt. Philological Secretary, Rev. A. W. Young, Treasurer (*Ex-officio*), General Secretary (*Ex-officio*), was appointed, to enquire into the present state of the Bibliotheca Indica publications and to recommend to Council such steps as they may consider necessary (*a*) to complete pending issues, and (*b*) to close down any publications that cannot be completed. Accepted by Council.
No. 15.
28-4-30.

Recommendations of the Bibliotheca Indica Sub-Committee of 16-6-30. Adopt. A Sub-Committee consisting of the President, General Secretary, Treasurer and the two Philological Secretaries was appointed to review the question of new works to be accepted for publication in the Bibliotheca Indica and to make recommendations.
No. 4.
28-7-30.

Letter from Sir George Grierson forwarding an opinion by Prof. Lanman concerning the typographical merits of the Kāshmīri Rāmāyana issued in the Bibliotheca Indica. Record.
No. 2.
25-8-30.

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Recommendations of the Bibliotheca Indica Sub-Committee of 2-9-30. Hold over. 29-9-30.
No. 1.

Letter from Sir George Grierson regarding the completion of the press copy for the Kāshmīri Dictionary. Record. 27-10-30.
No. 1.

Recommendations, Finance Committee No. 5 of 24-10-30. Bibliotheca Indica. Recommended that Prof. Caland's text edition of the Vaikhānasa Śrauta Sūtra may be taken up at once, pending final scrutiny of the financial position of the Bibliotheca Indica with reference to other works on the waiting list. Accepted by Council. 27-10-30.
No. 3.

Recommendations of the Bibliotheca Indica Sub-Committee of 2-9-30 (Held over from the Council Meeting of 29-9-30). Hold over, in the meantime Prof. Caland's text edition of the Vaikhānasa Śrauta Sūtra to be accepted and taken up as early as convenient. 27-10-30.
No. 6.

BUILDING—

Front wall near the entrance gate. The General Secretary to be authorised to arrange for lowering the wall and equalising it with the partition wall between the Society's plot and the plot leased to the Standard Oil Company of New York. 30-6-30.
No. 13.

Finance Committee No. 5 of 19-11-30.
The Society's new Building Repairs Fund Account. Recommendation: Transfer budgeted amount formally before the end of the year. Accepted by Council. 24-11-30.
No. 19.

COINS—

Letter from the Honorary Secretary, Shillong Coin Cabinet, forwarding a list of the coins and enquiring if any of the coins mentioned in the list are required for the Society's Coin Cabinet. Accept with thanks any coin that they can spare. 28-4-30.
No. 9.

COMMITTEES—

Constitution of Standing Committees of the Society, 1930-31. The Standing Committees be constituted as follows:—

(*a*) *Finance*— President, Treasurer, General Secretary } *Ex-officio*.
MM. H. P. Shastri.
Mr. J. C. Mitra.
Mr. James Insch.

(*b*) *Library*— President, Treasurer, General Secretary } *Ex-officio*.
Philological, Jt. Philological, Nat. Hist. (Biology), Nat. Hist. (Phy. Sc.), Anthropological, Medical, Library } Secretaries
Mr. H. E. Stapleton.

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(c) *Publication*—President, Treasurer, General Secretary, Philological, Jt. Philological, Nat. Hist. (Biology), Nat. Hist. (Phys. Sc.), Anthropological, Medical, Library Secretaries, Dr. U. N. Brahmachari. *Ex-officio*.

No. 6. 24-2-30.

Letter from the Director of Public Instruction, Bengal, regarding the formation in India of a National Council and Committee in connection with the International Research Council. A Committee consisting of the Ex-officio Members, Dr. Fermor and Dr. Brahmachari to draft a reply.

No. 7. 29-9-30.

CONDOLENCES—

Letter of condolence to, and reply thereto from, the relatives of the late Mr. R. D. Mehta. Record.

No. 4. 24-11-30.

CONGRATULATIONS AND THANKS—

Letter of thanks from the Bombay Branch of the Royal Asiatic Society. Record.

No. 1. 27-1-30.

Letter of thanks from the General Secretary, Indian Science Congress. Record.

No. 2. 27-1-30.

The retiring President expressed his thanks to the Members of Council for their unfailing and cordial co-operation with him during his tenure of office of President.

No. 15. 27-1-30.

Letters of thanks from Lt.-Col. H. W. Acton, Dr. Meghnad Saha and Dr. S. L. Hora, for their election as Ordinary Fellows of the Society. Record.

No. 2. 24-2-30.

Letter of thanks from Mr. A. Howard for the award to him of the Barclay Memorial Medal. Record.

No. 1. 1-4-30.

Letter of thanks from Mr. J. P. Mills for his election as an Ordinary Fellow of the Society. Record.

No. 2. 1-4-30.

Letter of thanks from Prof. Max Weber for the award to him of the Joy Gobind Law Memorial Medal. Record.

No. 1. 28-4-30.

Letter of thanks from Mr. M. Mahfuz-ul Haq for his nomination as a Member of Council. Record.

No. 1. 26-5-30.

Letter of thanks from Prof. H. Jacobi for his election as an Honorary Fellow of the Society. Record.

No. 1. 30-6-30.

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Letters of thanks from Dr. R. Robinson and Prof. W. Caland for their election as Honorary Fellows of the Society. Record.
No. 2. 30-6-30.

Letter of congratulation to Sir C. V. Raman for the award to him of the Nobel Prize for Physics. Approved.
No. 3. 24-11-30.

COUNCIL—

The retiring President expressed his thanks to the Members of Council for their unfailing and cordial co-operation with him during his tenure of office of President.
No. 15. 27-1-30.

On a proposal of the General Secretary the Council passed an unanimous vote of thanks to the retiring members of Council and specially to the President, for the way in which they had served the true interests of the Society during the period of their Council Membership.
No. 16. 27-1-30.

Signatures signifying acceptance of the election to Council by the Council Members. Record.
No. 1. 24-2-30.

Letter from Dr. Baini Prashad resigning his seat on the Council. Record with regret. Resolved on the proposal of Dr. M. Hidayat Hosain, seconded by Mr. K. C. De, that Mr. Mahfuz-ul Haq be elected to fill the vacancy, subject to the confirmation of the Ordinary Monthly General Meeting.
No. 2. 28-4-30.

Report absence on leave of the General Secretary. Record.
No. 3. 28-4-30.

Report return from leave of the General Secretary. Record.
No. 2. 26-5-30.

Summons of the General Secretary to Darjeeling. Absence approved.
No. 19. 26-5-30.

Fixing the date of next (September) Council and Committee Meetings. Usual day, last Monday of the month.
No. 3. 25-8-30.

Fixing date of the next (December) Council and Committee Meetings. Date to be 15th December.
No. 14. 24-11-30.

Informal consideration composition of Council for 1931-32.

After discussion the following list of candidates for nomination to next year's Council was placed before the meeting for consideration:

President ..	.. Lt.-Col. R. B. S. Sewell.
Vice-President ..	.. Dr. U. N. Brahmachari.
,, ,, ..	.. Sir R. N. Mookerjee.
,, ,, ..	.. Hon'ble Mr. Justice C. C. Ghose, Kt.
,, ,, ..	.. Dr. L. L. Fermor.
General Secretary	.. Mr. Johan van Manen.
Treasurer ..	.. Mr. K. C. Mahindra.
Philological Secretary	.. MM. H. P. Shastri.
Jt. Philological Secretary	.. Dr. M. Hidayat Hosain.
Nat. Hist. Secretary (Biology)	Dr. S. L. Hora.
,, ,, ,, (Phy. Sc.)	Dr. W. A. Jenkins.

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Anthropological Secretary	..	Rev. P. O. Bodding.
Medical Secretary	..	Lt.-Col. R. Knowles.
Library Secretary	..	Dr. B. S. Guha.
Member of Council	..	Mr. B. B. Ghose.
,, ,,	..	Sir J. C. Coyajee.
,, ,,	..	Mr. James Insch.
,, ,,	..	Mr. K. C. De.
,, ,,	..	Mr. M. Mahfuz-ul Haq.

Resolved that the General Secretary do print and circulate to the Members of Council the list of the Council as at present constituted, together with the new list placed before the meeting, and provided with a blank column for additional names; that these lists shall be returned to the General Secretary within a week of date of issue, that a list be compiled of the candidates finally proposed and be placed before next Council Meeting to be voted upon.

No. 23.

24-11-30.

Absence of Treasurer from Calcutta. Resolved that the General Secretary (Mr. Johan van Manen) be authorised to officiate as Honorary Treasurer to the Society during the absence of the Honorary Treasurer, Mr. K. C. Mahindra, from Tuesday, the 25th November, 1930, until notification of the latter's return to Calcutta and resumption of office.

No. 24.

24-11-30.

Council nomination, 1930-31. The General Secretary reported that 19 Council Members had returned the list of candidates circulated, duly signed and unanimously approved with one single alternative suggestion. Resolved that the list of names placed before the Council in the November Meeting be declared that of the Council candidates for election to next year's Council and that it be ordered to be issued to the Resident Members, as prescribed in Rule 44.

No. 11.

15-12-30.

FELLOWS—

Recommendations of the Meeting of Fellows, 3-1-30. Propose selected candidates for election in the Annual Meeting.

No. 7.

27-1-30.

Letters of thanks from Lt.-Col. H. W. Acton, Dr. Meghnad Saha and Dr. S. L. Hora, for their election as Ordinary Fellows of the Society. Record.

No. 2.

24-2-30.

Letter of thanks from Mr. J. P. Mills for his election as an Ordinary Fellow of the Society. Record.

No. 2.

1-4-30.

June Meeting of Ordinary Fellows (Rule 2 of the Fellowship regulations). The General Secretary to fix a date in consultation with some senior Resident Fellows.

No. 17.

26-5-30.

Recommendations of the Meeting of Fellows, held on 10-10-30. Accept.

No. 18.

24-11-30.

FINANCE—

Finance Committee No. 3 of 22-1-30. List of members in arrears with subscriptions for the year ending with the 31st December, 1929. Recommendation: Apply Rules. Accepted by Council.

No. 8.

27-1-30.

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Report payment of arrears of subscription by Prof. J. L. Bhatnagar whose name was announced as removed from the member list under Rule 38 on 2-12-29. Announce. 27-1-30.
No. 12 (*b*).

Finance Committee No. 4 of 19-2-30. Receipt of a copy of the statement of accounts of the Society for the year 1929, duly certified by the Auditors. Recommendation: Record. Accepted by Council. 24-2-30.
No. 7.

Recommendations, Finance Committee No. 5 of 19-2-30. Resolved to request the Honorary Treasurer to study and report on the question of temporary investment of liquid cash. Accepted by Council. 24-2-30.
No. 7.

Finance Committee No. 4 of 26-3-30. The Honorary Treasurer reported on the question of temporary investment of liquid cash, and explained the arrangements made by him with the Central Bank of India, Ltd. He recommended transfer to fixed deposit with this Bank for one and two months respectively of two sums of Rs. 5,000 each. Recommendation: Approved. Adopted by Council. 1-4-30.
No. 10.

Finance Committee No. 5 of 26-3-30. Payments to Mr. Ivanow. Recommended to sanction payment to Mr. Ivanow of the following alternative sums on fulfilment of the conditions attached to each :— Either (*a*) A sum of Rs. 1,650 (Sixteen Hundred and Fifty only) on condition of Mr. Ivanow furnishing a receipt 'in full settlement and discharge of all claims whatever against the Asiatic Society of Bengal'; or (*b*) A sum of Rs. 750 (Seven Hundred and Fifty only) on condition of Mr. Ivanow furnishing a receipt 'in full settlement and discharge of all claims against the Asiatic Society in respect of salary'. Col. Barwell to be requested kindly to consider these formulas and to suggest any desirable modification or addition.

Council order: Adopt with this modification that in Recommendation No. 5, paragraph (*a*), the word 'claims against' be changed to 'claims whatsoever against', and that only the first mentioned sum of Rs. 1,650 mentioned in para. (*a*) of the above Recommendation No. 5, be tendered to Mr. Ivanow.

Further resolved that the General Secretary be asked to acknowledge Mr. Ivanow's letter of the 28th March, 1930, in the following terms :—

'Dear Sir,

The Council directs me to acknowledge receipt of your letter of the 28th March, 1930, and to request you to call at the office of the Society on Friday the 4th April between 2 and 4 p.m. to receive payment of Rs. 1,650 (Sixteen Hundred and Fifty) as per terms of the Council resolution of the 13th March, 1930 (already communicated to you under my letter No. 653 of the 17th March, 1930). A cheque for this amount will be kept ready to be handed over to you on your signing a receipt in the following form :—

'Received from the Asiatic Society of Bengal a sum of Rs. 1,650 (Sixteen Hundred and Fifty only) in full settlement and discharge of all claims whatsoever against the Asiatic Society of Bengal.'

Yours faithfully,
(Signature),
General Secretary,
Asiatic Society of Bengal.

No. 10. 1-4-30.

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यह पुस्तक वितरित न की जाय
NOT TO BE ISSUED

Finance Committee No. 3 (*a*) of 23-4-30. Report on two fixed deposits of Rs. 5,000 each made with the Central Bank of India, Ltd., Calcutta, for one and two months respectively. Recommendation : Submit to Council for information. Accepted by Council.
No. 13.
28-4-30.

Finance Committee No. 3 (*a*) of 21-5-30. Report on a fixed deposit of Rs. 10,000 made with the Central Bank of India for three months. Recommendation : Approve. Accepted by Council.
No. 9.
26-5-30.

Finance Committee No. 3 (*b*) of 21-5-30. Report on fixed deposit of Rs. 5,000 which matures on 28-5-30. Recommendation : To be recalled. Accepted by Council.
No. 9.
26-5-30.

Finance Committee No. 3 (*c*) of 21-5-30. Report on fixed deposit of Rs. 10,000 made with the Central Bank of India for 4 months on 19-5-30. Recommendation : Approve. Accepted by Council.
No. 9.
26-5-30.

Finance Committee No. 3 (*d*) of 21-5-30. Purchase of a 'Protos Vacuum Cleaner' for the Society. Recommendation : Purchase. Accepted by Council.
No. 9.
26-5-30.

Finance Committee No. 4 of 21-5-30. Application from the Staff to transfer the Provident Fund amount from the Imperial Bank to some other local Bank. Recommendation : Amend Regulation 8 of the Society's Provident Fund Rules so as to allow the request to be met. Council order : Accept. Further resolved to amend No. 8 of the Provident Fund Rules by adding the words 'or investment in a Trustee security.'
No. 9.
26-5-30.

Finance Committee No. 3 (i) of 25-6-30. Report on fixed deposit of Rs. 5,000 made with the Central Bank of India, for 4 months on 10-6-30. Recommendation : Record. Accepted by Council.
No. 6.
30-6-30.

Finance Committee No. 3 (ii) of 25-6-30. Report on fixed deposit of Rs. 5,021-3-6, with the Central Bank of India, which matures on 28-6-30. Recommendation : Record. Accepted by Council.
No. 6.
30-6-30.

Finance Committee No. 3 (iii) of 25-6-30. Report on fixed deposit with the Imperial Bank of India for Rs. 10,000 which matures on 4-7-30. Recommendation : Call in, and request the Honorary Treasurer to arrange concerning re-investment or otherwise according to circumstances. Accepted by Council.
No. 6.
30-6-30.

Finance Committee No. 3 (*a*) of 23-7-30. Report by the Honorary Treasurer on two fixed deposits made with the Central Bank of India, during the month, for Rs. 10,000 and Rs. 5,000. Recommendation : Record. Adopted by Council.
No. 5.
28-7-30.

Finance Committee No. 3 (*b*) of 23-7-30. Report by the Honorary Treasurer on a fixed deposit with the Central Bank of India, Calcutta, for Rs. 10,000 which matures on 13-8-30. Recommendation : Record. Adopted by Council.
No. 5.
28-7-30.

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Finance Committee No. 3(c) of 23-7-30. Renewal of the Society's Fire Policy No. 13204395 for Rs. 1,25,000 with the Commercial Union Assurance Co. Ltd., Calcutta, which expires on 10-8-30. Recommendation: Record. Adopted by Council.
No. 5. 28-7-30.

Finance Committee No. 4(1) of 20-8-30. Report by the Honorary Treasurer, on a fixed deposit made with the Central Bank of India, Calcutta, for Rs. 7,500. Recommendation: Approve. Accepted by Council.
No. 5. 25-8-30.

Finance Committee No. 4(2) of 20-8-30. Report by the Honorary Treasurer, on a fixed deposit with the Central Bank of India, Calcutta, for Rs. 10,000 which matures on 19-9-30. Recommendation: Record. Accepted by Council.
No. 5. 25-8-30.

Finance Committee No. 4(3) of 20-8-30. Report by the Honorary Treasurer, on the purchase of $4\frac{1}{2}\%$ G.P. Notes of 1934, for Rs. 5,000 Face Value for the Provident Fund Account of the Society. Recommendation: Approve. Accepted by Council.
No. 5. 25-8-30.

Finance Committee No. 2(2) of 24-9-30. Report by the Honorary Treasurer, on the renewal during the month, of the fixed deposit with the Central Bank of India for Rs. 10,000 with interest, for a further period of 3 months. Recommendation: Approve. Accepted by Council.
No. 3. 29-9-30.

Finance Committee No. 2(3) of 24-9-30. Report by the Honorary Treasurer on a fixed deposit with the Central Bank of India for Rs. 5,000 which matures on 11-10-30. Recommendation: Approve. Accepted by Council.
No. 3. 29-9-30.

Finance Committee No. 3 of 24-10-30. (*a*) Report by the Honorary Treasurer, on the Renewal during the month, of the fixed deposit with the Central Bank of India, for Rs. 5,000 with interest, for a further period of 4 months. (*b*) Report by the Honorary Treasurer, on a fixed deposit with the Central Bank of India for Rs. 5,000 which matures on 10-11-30. Recommendation: Action approved. Treasurer to be authorised to re-deposit at his discretion. Accepted by Council.
No. 7. 27-10-30.

Recommendations, Finance Committee No. 5 of 24-10-30. Bibliotheca Indica. Recommended that Prof. Caland's text edition of the Vaikhānasa Śrauta Sūtra may be taken up at once, pending final scrutiny of the financial position of the Bibliotheca Indica with reference to other works on the waiting list. Accepted by Council.
No. 3. 27-10-30.

Finance Committee No. 2 of 19-11-30. Report by the Honorary Treasurer of the renewal during the month of a fixed deposit for Rs. 5,000, with interest, with the Central Bank of India, Calcutta, for a period of one month. Recommendation: Approved. Accepted by Council.
No. 19. 24-11-30.

Finance Committee No. 3 of 19-11-30. Report by the Honorary Treasurer concerning a fixed deposit, with the Central Bank of India, Calcutta, of Rs. 5,000, with interest which matures on 10-12-30. Re-

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commendation : The Treasurer to be authorised to re-deposit at his discretion. Accepted by Council.
No. 19.
24-11-30.

Finance Committee No. 4 of 19-11-30. Report by the Honorary Treasurer concerning a fixed deposit with the Central Bank of India, Calcutta, of Rs. 10,000, with interest which matures on 19-12-30. Recommendation : The Treasurer to be authorised to re-deposit at his discretion. Accepted by Council.
No. 19.
24-11-30.

Finance Committee No. 5 of 19-11-30. The Society's new Building Repairs Fund Account. Recommendation : Transfer budgeted amount formally before the end of the year. Accepted by Council.
No. 19.
24-11-30.

Finance Committee No. 6 of 19-11-30. Permanent Reserve Fund. Recommendation : Transfer formally to the Permanent Reserve Fund before the end of the year an amount as near to Rs. 10,000 as recommended by the Treasurer to the December Council Meeting. Accepted by Council.
No. 19.
24-11-30.

Finance Committee No. 7 of 19-11-30. Corporation Tax Bills. Recommendation : Pay, and recover advances from lessees. Accepted by Council.
No. 19.
24-11-30.

Finance Committee No. 8 of 19-11-30. Press outstanding bills for works in progress. Recommendation : Obtain from press statement of liabilities to ultimo November. Accepted by Council.
No. 19.
24-11-30.

Recommendations, Finance Committee No. 9 of 19-11-30. Accounts Messrs. Luzac & Co. Send letter by Air Mail asking for accounts to date and remittance before the end of the year. Accepted by Council.
No. 19.
24-11-30.

Finance Committee No. 4(1) of 10-12-30. Society's contribution to Indian Science Congress for 1930. Recommendation : No contribution. Accepted by Council.
No. 6.
15-12-30.

Finance Committee No. 4(2) of 10-12-30. Society's contribution to the Staff Provident Fund for the year 1930. Recommendation : Pay. Accepted by Council.
No. 6.
15-12-30.

Finance Committee No. 4(3) of 10-12-30. Statement of arrear subscriptions written off during the year, on account of deaths, Rule 38, Resignations, etc. Recommendation : Authorise the writing off in the Society's books of an amount of Rs. 1,167-10-9 as per statement and adjust accounts accordingly. Accepted by Council.
No. 6.
15-12-30.

Finance Committee No. 4(4) of 10-12-30. Press outstanding bills for works in progress. Recommendation : Record. Accepted by Council.
No. 6.
15-12-30.

Finance Committee No. 4(5) of 10-12-30. Budget for 1931. Recommendation : Recommend for adoption as passed in the special budget meeting of 10-12-30. Accepted by Council.
No. 6.
15-12-30.

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Finance Committee No. 4(6) of 10-12-30. Increment of salaries to staff. Recommendation: That the annual increments to staff be sanctioned as per attached schedule. Accepted by Council.
15-12-30.
No. 6.

Recommendations, Finance Committee No. 5 of 10-12-30. Letter from the Director of Public Instruction, Bengal, enquiring whether it is possible to suspend or reduce three Government Grants towards the publication of Oriental Works. Resolved that the General Secretary be instructed to reply immediately in terms as agreed upon by the meeting. Accepted by Council.
15-12-30.
No. 6.

FURNITURE—

Presentation to the Society of a wall clock by Dr. U. N. Brahmachari. The Council's thanks to be conveyed to the donor.
24-2-30.
No. 3.

Office furniture. The General Secretary to be authorised to utilise unspent balance of office furniture budget grant on office tables and collapsible chairs. A stock register of the Society's furniture to be prepared.
24-11-30.
No. 26.

GRANTS—

Letter from the Secretary to the Government of India, Department of Education, Health and Lands, intimating the renewal of the Annual Grant (Arabic and Persian MSS.) to the Society. Record with thanks.
26-5-30.
No. 3.

Recommendations, Finance Committee No. 5 of 10-12-30. Letter from the Director of Public Instruction, Bengal, enquiring whether it is possible to suspend or reduce three Government Grants towards the publication of Oriental Works. Resolved that the General Secretary be instructed to reply immediately in terms as agreed upon by the meeting. Accepted by Council.
15-12-30.
No. 6.

HONORARY FELLOWS—

Letter from Mr. A. Howard, forwarding a proposal from Dr. J. L. Simonsen for the election of Prof. R. Robinson as an Honorary Fellow. Order: Put up for election as Honorary Fellows in the next General Meeting: Prof. Robinson, Prof. Caland, Prof. Jacobi. Resolved that in future vacancies should be reported to the Council with a view to the filling up of such vacancies within six months after their occurrence.
1-4-30.
No. 6.

Letter of thanks from Prof. H. Jacobi for his election as an Honorary Fellow of the Society. Record.
30-6-30.
No. 1.

Letters of thanks from Dr. R. Robinson and Prof. W. Caland for their election as Honorary Fellows of the Society. Record.
30-6-30.
No. 2.

INDIAN SCIENCE CONGRESS—

Letter of thanks from the General Secretary, Indian Science Congress. Record.
27-1-30.
No. 2.

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Report completion reprint Proceedings Fourth Indian Science Congress. Record. The General Secretary to be authorised to prepare a reprint of the Proceedings of the Fifth Congress.
No. 3.
28-7-30.

Matters relating to the Presidential Address, Section of Chemistry, of the ensuing 18th Session of the Indian Science Congress, Nagpur, 1931. General Secretary's action approved. Record.
No. 25.
24-11-30.

Finance Committee No. 4 (1) of 10-12-30. Society's contribution to Indian Science Congress for 1930. Recommendation: No contribution. Accepted by Council.
No. 6.
15-12-30.

INVITATIONS—

H.E. the Viceroy. The Military Secretary to be communicated with to ascertain whether an invitation to H.E. will be welcome to visit the Society during his next cold weather visit to Calcutta.
No. 14.
27-10-30.

Letter of invitation to, and reply thereto from, the Military Secretary to H.E. the Viceroy. Record.
No. 2.
24-11-30.

Invitation from the British Association for the Advancement of Science to send a delegate to represent the Society at their forthcoming centenary Meeting to be held in London in September, 1931. Accept invitation. Enquire concerning mode of representation and whether plural representation to different sections is contemplated explaining status and branches of science represented by available delegates. Draft of congratulatory letter to be prepared.
No. 10.
24-11-30.

JUBILEE CELEBRATION—

The President drew attention to the fact that early in 1934 the Society will celebrate its 150th Anniversary. Resolved that a Jubilee Celebration should be carefully organised well in advance, and that Council Members be invited to forward any suggestion on the subject within the next few months for early consideration.
No. 11.
25-8-30.

KAMALA LECTURESHIP—

Representation on the Selection Committee, Kamala Lectureship, Calcutta University. The Council's nominee to be MM. Haraprasad Shastri.
No. 5.
24-2-30.

LEASE—

Progress report lease to and agreements with the Standard Oil Company of New York. The General Secretary reported that the revised lease to and agreement with Standard Oil Company of New York have been approved on behalf of the Council by Mr. B. B. Ghose, in accordance with Council Resolution No. 4 of the Council Meeting of 28th October, 1929. Resolved that the drafts be approved and that the General Secretary, in accordance with the above cited Council resolution, be, and hereby is, authorised to sign both lease and agreement on behalf of the Council of the Asiatic Society of Bengal.
No. 8.
1-4-30.

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Report signing of the lease agreement by the Standard Oil Co. of New York. Record.
No. 4. 28-4-30.

Matters relating to the lease with the Standard Oil Co. of New York. Draft of a Deed of Rectification between Standard Oil Co. of New York and the Asiatic Society of Bengal, submitted by Messrs. Clarke, Rawlins, Ker & Co., under cover of their No. 2799 of 4th June, 1930. Resolved that the draft be approved and that the General Secretary be, and hereby is, authorised to sign the agreement on behalf of the Council of the Asiatic Society of Bengal.
No. 3. 30-6-30.

LECTURES—

Public Lectures, winter session, 1930-31. Members of Council to be invited to send in suggestions.
No. 12. 24-11-30.

Public Lectures, winter session, 1930-31. Approach the following three gentlemen :—

(1) Mr. O. C. Gangoly, (2) Major R. S. Wauchope, and (3) Mr. C. A. John Hendry.

In future years the question of general lectures for the ensuing winter season to be brought up in July.
No. 4. 15-12-30.

LIBRARY—

Library Committee No. 1 of 24-2-30. Suggestion from Dr. W. A. K. Christie for the purchase of the Oxford Dictionary. Recommendation : Enquire in England for the price of a sound second-hand copy of the Oxford Dictionary. Council order : Adopt. Defer purchase of the Oxford Dictionary. Purchase the Dictionary of National Biography as offered for £16/16 by John Grant, Edinburgh.
No. 8. 24-2-30.

Library Committee No. 2 of 1-4-30. Resolved to transfer any balance left over from the donation made by Sir R. N. Mookerjee for the purchase of the new edition of the Encyclopædia Britannica to the funds allocated to book purchase. Adopted by Council.
No. 11. 1-4-30.

LOAN OF BOOKS AND MANUSCRIPTS—

Report loan of books and documents to the exhibition arranged by the All-Bengal Literary Conference. Action approved.
No. 13. 24-2-30.

Requests for the loan of the Mahābhārata MS. of Adi Parvan (Commentary) in Bengali, from the Editor, Mahābhārata, Bhandarkar Oriental Research Institute, Poona. Resolved that the original MS. is too brittle and cannot be sent out from the Society's premises ; a photographic reproduction to be made and this can be supplied to the Editor, Mahābhārata, Bhandarkar Oriental Research Institute, Poona, at a cost of Rs. 85, of which Rs. 40 will be refunded if the rotograph copy is ultimately returned.
No. 8 (*a*). 28-4-30.

Request for the loan of two manuscripts of 'Yajur Mañjari' to Mr. Vachaspati by Prof. Sri Ram Sharma, Lahore. Lend on usual bond executed by Prof. Sri Ram Sharma ; MSS. to be kept in the D.A.V. College Library.
No. 8 (*b*). 28-4-30.

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Reprint of the Indemnity Bond form for the loan of the Society's Manuscripts. The form to be referred to Col. Barwell for any alteration that he may think necessary.
No. 11.
28-4-30.

MEMBERSHIP—

Finance Committee No. 3 of 22-1-30. List of members in arrears with subscriptions for the year ending with the 31st December, 1929. Recommendation: Apply Rules. Accepted by Council.
No. 8.
27-1-30.

List of members in arrears with subscriptions under Rules 22, 27, and 38. Apply rules.
No. 12 (*a*).
27-1-30.

Report payment of arrears of subscription by Prof. J. L. Bhatnagar whose name was announced as removed from the member list under Rule 38 on 2-12-29. Announce.
No. 12 (*b*).
27-1-30.

Lists of members in arrears with subscriptions for four or more quarters. Apply rules in the case of Lists Nos. 1 and 2. List No. 3 to be deferred for one month. A suitable letter to Mr. K. C. Chatterjee asking for the return of the books and manuscripts belonging to the Society and at present with him, to be drafted by the General Secretary and submitted to Col. Barwell for approval before issue.
No. 17.
28-4-30.

Removal of names of members in arrears with subscriptions, under Rules 37 and 38 (Postponed from the last Council Meeting of 28-4-30). Apply rules.
No. 13.
26-5-30.

Consideration of matters relating to Mr. K. C. Chatterjee. Request Dr. M. Hidayat Hosain's friendly intervention, after which Col. Barwell is to be asked for further advice.
No. 14.
26-5-30.

Removal of names of members in arrears with subscriptions under Rules 37 and 38. Apply rules. Announce as removed under Rule 38.
No. 10.
30-6-30.

List of members in arrears with subscription for four or more quarters. Apply rules. General Secretary first to scrutinize the list and to send personal letters to selected cases.
No. 9.
28-7-30.

Letters to and from Mr. C. S. Middlemiss concerning his life-membership. Record.
No. 1.
25-8-30.

Lists of members in arrears with subscriptions for four or more quarters. (Rule 53.) List No. 1, 20 names put up. List No. 2 of members in arrears for 8 quarters and to whom Circular No. 1 has been sent on various occasions. 14 names put up. List No. 3 of members in arrears for more than 8 quarters and to whom Circular No. 2 has already been sent. 11 names put up. Apply rules.
No. 11.
27-10-30.

Removal of names under Rule 40. Wilhelm von Pochhammer (An Ordinary Member, 1925). Apply rules.
No. 12.
27-10-30.

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Finance Committee No. 4(3) of 10-12-30. Statement of arrear subscriptions written off during the year, on account of deaths, Rule 38, Resignations, etc. Recommendation: Authorise the writing off in the Society's books of an amount of Rs. 1,167-10-9 as per statement and adjust accounts accordingly. Accepted by Council.
No. 6. 15-12-30.

MEMORIAL MEDALS—

Letter from the President conveying an offer of a donation from Mr. Devaprosanna Mukherji for the institution of a periodical award for meritorious work on Law in India. Postpone.
No. 5. 27-1-30.

Letter of thanks from Mr. A. Howard for the award to him of the Barclay Memorial Medal. Record.
No. 1. 1-4-30.

Letter of thanks from Prof. Max Weber for the award to him of the Joy Gobind Law Memorial Medal. Record.
No. 1. 28-4-30.

Appointment Advisory Board for the Annandale Memorial Medal. The Board to consist of :—

(1) Anthropological Secretary.
(2) Natural History Secretary (Biology).
(3) Medical Secretary.
(4) Lt.-Col. R. B. S. Sewell.
(5) Mr. Johan van Manen.

No. 5(*a*). 27-10-30.

Appointment Advisory Board for the Sir William Jones Memorial Medal. The Board to consist of :—

(1) Natural History Secretary (Biology).
(2) Natural History Secretary (Physical Science).
(3) Anthropological Secretary.
(4) Medical Secretary.
(5) Lt.-Col. R. B. S. Sewell.
(6) Dr. U. N. Brahmachari.
(7) Mr. Johan van Manen.

No. 5(*b*). 27-10-30.

Recommendation of the Sir William Jones Memorial Medal Advisory Board. Accept.
No. 16. 24-11-30.

Recommendation of the Annandale Memorial Medal Advisory Board. Accept.
No. 17. 24-11-30.

MISCELLANEOUS—

Letter from the Secretary, Indian Historical Records Commission, forwarding an extract of H.E. the Viceroy's speech at the opening of the 10th Session of the Chamber of Indian Princes at New Delhi. Record.
No. 3. 1-4-30.

Letters from Dr. U. N. Brahmachari offering to defray the expenses of serving light refreshment to the Members on General Meeting days, and presenting a set of crockery to the Society for the purpose. Accept with thanks.
No. 5. 1-4-30.

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Appeal from the Royal Society of Tropical Medicine and Hygiene for help in connection with the memorial to the late Sir Patrick Manson. Hold over.

No. 7.

1-4-30.

Letter from the Director, Zoological Survey of India, forwarding a memorandum on the conclusions and recommendations of the Royal Commission on National Museum and Galleries. Record the Society's approval of the conclusions and recommendations of the Royal Commission and intimate the fact to Col. Sewell requesting him to intimate whether he wishes the Society to take any further action.

No. 4.

26-5-30.

Appeal from the Royal Society of Tropical Medicine and Hygiene for help in connection with the memorial to the late Sir Patrick Manson. (Held over from the Council Meeting of 1-4-30.) A donation of ten guineas to be made.

No. 7.

26-5-30.

Circular Linguistic Society of America concerning their series of volumes of Vedic Variants. Issue their folders gratis with Journal.

No. 15.

26-5-30.

The financial position of the General Secretary. The President requested the General Secretary to withdraw from the meeting after which he raised the question of the General Secretary's financial position. He pointed out that the Office of General Secretary, as an unpaid office, puts the incumbent to appreciable necessary expenses wholly incurred in the performance of his duties. Hitherto a personal compensation allowance of Rs. 500 monthly had been paid to meet such expenses but this was evidently not sufficient. He suggested that this personal compensation allowance should be raised to Rs. 750 monthly, and moved formally that this should be done with effect from the 1st of July, 1930. The Honorary Treasurer seconded the proposal. Carried unanimously.

No. 14.

30-6-30.

Considered two letters addresed to Dr. Baini Prashad by the International Education Board and the Rockfeller Foundation, both of New York, on the subject of financial help to the Asiatic Society of Bengal, and forwarded by Dr. Prashad to the President. A letter of thanks from the Council to be addressed to Dr. Prashad.

No. 10.

25-8-30.

Letter from the Director of Public Instruction, Bengal, regarding the formation in India of a National Council and Committee in connection with the International Research Council. A committee consisting of the ex-officio Members, Dr. Fermor, and Dr. Brahmachari to draft a reply.

No. 7.

29-9-30.

Correspondence between Dr. U. N. Brahmachari and Sir Leonard Rogers regarding the priority of the idea to found a School of Tropical Medicine in Calcutta. Endeavours to be made to ascertain the actual facts from the published documents (*Englishman* and *British Medical Journal*).

No. 3.

27-10-30.

Letter from Mrs. Stan Harding soliciting an expression of opinion on behalf of the Society on her work connected with a cinematographic record of old Indian dancing to be placed before the Government of India. Record.

No. 5.

24-11-30.

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Letter to the Educational Commissioner to the Government of India in connection with Mrs. Stan Harding's letter to the A.S.B. Approved.
No. 6. 24-11-30.

Draft reply to the letter from the Director of Public Instruction, Bengal, regarding the formation in India of a National Research Council. Approved.
No. 7. 24-11-30.

Further materials in connection with the priority of the idea to found a School for Tropical Medicine in Calcutta, furnished by the Medical Secretary. Record. Material to be preserved in archives. Council's thanks to be conveyed to Lt.-Col. R. Knowles.
No. 8. 24-11-30.

Letter from Prof. Sri Ram Sharma suggesting to establish an Indian Historical Conference under the auspices of the Society. Sub-Committee to report, consisting of the ex-officio Members, Mr. H. E. Stapleton, MM. H. P. Shastri and Sir Jadunath Sircar.
No. 11. 24-11-30.

PRESENTATIONS—

Presentation to the Society of a wall clock by Dr. U. N. Brahmachari. The Council's thanks to be conveyed to the donor.
No. 3. 24-2-30.

Presentation by Dr. S. L. Hora of a copy of his paper on the 'Study of Hamilton Buchanan's Gangetic Fishes' in the Memoirs of the Indian Museum. Record with thanks to the donor.
No. 4. 1-4-30.

Letter from the Assistant Surveyor-General presenting an old Tibetan Manuscript to the Society. Record with thanks to the donor.
No. 5. 28-4-30.

Presentation by Dr. U. N. Brahmachari of a copy of Webster's New International Dictionary to the Society's Library. Accept with the Council's thanks to the donor.
No. 15. 27-10-30.

Presentation to the Society of two ichthyological works by Mr. K. C. De. Hearty vote of thanks to Mr. De.
No. 1. 15-12-30.

Presentation to the Society by the Hon'ble Sir B. L. Mitter of an album containing a series of photographs of Law Members of the Governor-General's Council from 1834 to 1930. Hearty vote of thanks to Sir B. L. Mitter.
No. 2. 15-12-30.

PROVIDENT FUND—

Finance Committee No. 4 of 21-5-30. Application from the Staff to transfer the Provident Fund amount from the Imperial Bank to some other local Bank. Recommendation: Amend Regulation 8 of the Society's Provident Fund Rules so as to allow the request to be met. Council order: Accept. Further resolved to amend No. 8 of the Provident Fund Rules by adding the words 'or investment in a Trustee security'.
No. 9. 26-5-30.

Finance Committee No. 4 (3) of 20-8-30. Report by the Honorary Treasurer, on the purchase of 4½% G.P. Notes of 1934, for Rs. 5,000

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Face Value for the Provident Fund Account of the Society. Recommendation: Approve. Accepted by Council.
No. 5.
25-8-30.

Finance Committee No. 4(2) of 10-12-30. Society's contribution to the Staff Provident Fund for the year 1930. Recommendation: Pay. Accepted by Council.
No. 6.
15-12-30.

PUBLICATIONS—

Publication Committee No. 1 of 28-4-30. Application from Mr. W. Ivanow for the return of his two papers for revision by him. Recommendation: Application agreed to. Accepted by Council.
No. 15.
28-4-30.

Publication Committee No. 10 of 28-4-30. Paper by Mr. P. C. Mahalanobis on 'A statistical study of certain anthropometric measurements from Sweden'. Recommendation: Regret unable to accept, *vide* Rule 1. 'The bounds of the investigation of the Asiatic Society of Bengal will be the geographical limits of Asia, and within these limits its enquiries will be extended to whatever is performed by man or produced by nature.' The paper to be returned to Rev. P. O. Bodding. Accepted by Council.
No. 15.
28-4-30.

Publication Committee No. 13 of 28-4-30. List of outstanding works of the Bibliotheca Indica. Recommendation: A Sub-Committee consisting of the following: Mr. B. B. Ghose (Chairman), Philological Secretary, Jt. Philological Secretary, Rev. A. W. Young, Treasurer (ex-officio), General Secretary (ex-officio), was appointed, to enquire into the present state of the Bibliotheca Indica publications and to recommend to Council such steps as they may consider necessary. (*a*) To complete pending issues, and (*b*) to close down any publications that cannot be completed. Accepted by Council.
No. 15.
28-4-30.

Questions relating to Mr. Ivanow: Further letter from Mr. Ivanow to the President in connection with the Arabic Catalogue. Suitable reply to be sent.
No. 10 (*b*).
28-4-30.

Completion of the first volume of Mr. Ivanow's Catalogue of Arabic MSS. The General Secretary to be authorised to arrange with Mr. L. Bogdanov.
No. 11.
30-6-30.

Report completion reprint Proceedings Fourth Indian Science Congress. Record. The General Secretary to be authorised to prepare a reprint of the Proceedings of the Fifth Congress.
No. 3.
28-7-30.

Publication Committee No. 6 of 28-7-30. Kitāb al-mā' al-Waraqī wa'l ard an-Najmīyah, edited by Muhammad Turab Ali, with Latin translation, edited by Mr. H. E. Stapleton. Recommendation: Obtain in the first instance estimates for publication in Memoirs and in Bibliotheca Indica. Adopted by Council.
No. 7.
28-7-30.

Enquiry from Mr. H. E. Stapleton regarding the publication of his paper on 'A tenth century Chemical Treatise in Arabic', and matters relating thereto. Accept for publication in Memoirs. Thanks to be conveyed to Mr. H. E. Stapleton and Director of Public Instruction, Bengal, for their financial support towards the publication of the work.
No. 15.
24-11-30.

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REPRESENTATION—

Representation on the Selection Committee, Kamala Lectureship, Calcutta University. The Council's nominee to be MM. Haraprasad Shastri.
No. 5. 24-2-30.

Representation of the Society at the International Ornithological Congress to be held at Amsterdam. Dr. Baini Prashad to be requested to represent the Society.
No. 7. 28-4-30.

Representation of the Society at the Sixth All-India Oriental Conference at Patna in December, 1930. MM. H. P. Shastri and Mr. K. C. De to be invited to represent the Society.
No. 6. 26-5-30.

Circular International Botanical Congress, 1930, allotting to the Asiatic Society of Bengal one vote in connection with the discussions to be held in the Congress on Nomenclature. The General Secretary to arrange for representation.
No. 16. 26-5-30.

Circular letter from the Director of Public Instruction, Bengal, regarding the centenary meeting of the British Association for the Advancement of Science to be held in London. Record.
No. 9. 24-11-30.

Invitation from the British Association for the Advancement of Science to send a delegate to represent the Society at their forthcoming centenary Meeting to be held in London in September, 1931. Accept invitation. Enquire concerning mode of representation and whether plural representation to different sections is contemplated explaining status and branches of science represented by available delegates. Draft of congratulatory letter to be prepared.
No. 10. 24-11-30.

REQUESTS—

Request from Mr. G. P. Majumdar to be elected an Associate Member of the Society. Decline.
No. 4. 27-1-30.

Letter from Lt.-Col. D. L. R. Lorimer requesting an expression of opinion by the Society on the Commission d'Enquête Linguistique. Suitable reply to be drafted by the General Secretary.
No. 6. 28-4-30.

Request to publish the first circular concerning the 18th International Congress of Orientalists, Leiden, in the Society's Journal. Insert gratis in Journal.
No. 5. 26-5-30.

Request from Mr. Lakhiraj for some additional space at the back of his new shop for a sanitary installation. The General Secretary to be authorised to arrange under suitable safeguards against annoyance, and on condition of Messrs. Lakhiraj Shewakram & Co., relinquishing the portion of the plot leased by them and not built over.
No. 12. 30-6-30.

Request for the use of the Society's hall by the Mining and Geological Institute of India. Action approved.
No. 1. 28-7-30.

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Request for the use of the Society's Committee Room for occasional Committee Meetings of the Royal Flying Club. Grant.

No. 2. 27-10-30.

STAFF—

Application for leave from Mr. Ivanow. On a proposal by Col. Barwell, seconded by Col. Knowles, unanimously resolved: That the General Secretary be empowered to write to Mr. Ivanow requiring him to explain in *writing* his conduct in relation to the matters brought before the Council in the General Secretary's minute of the 13th January to the Members of the Ivanow Panel and Council Circular No. 3 of the 7th January, and that the General Secretary be further directed to request Sir C. C. Ghose, or in case the latter should not be available, some other member of Council, to be good enough to settle the terms of the General Secretary's requisition.

No. 6. 27-1-30.

Questions relating to Mr. Ivanow. Resolved:

Resolution No. 1.

Proposed by Mr. B. B. Ghose.
Seconded by Col. Knowles.

Resolved that the Council considers the conduct of Mr. Ivanow to have been for some time past unsatisfactory and finds the explanation furnished by him in his letter of 5th February, 1930, to be wholly unacceptable and decides accordingly to dispense with his services. But, as an act of grace, will permit him, if he be so minded, to tender his resignation. Such resignation should be tendered on or before the 15th of March, 1930, to take effect from that date.

The General Secretary is directed to forward to Mr. Ivanow a copy of this Resolution.

Carried unanimously.

Resolution No. 2.

Proposed by Mr. B. B. Ghose.
Seconded by Col. Barwell.

Resolved that failing receipt of Mr. Ivanow's resignation on or before 15th of March, 1930, the General Secretary be directed to intimate to Mr. Ivanow that in accordance with the terms of the preceding resolution, Mr. Ivanow is dismissed from the service of the Society with effect from the 15th of March, 1930.

Carried unanimously.

Resolution No. 3.

Proposed by Col. Barwell.
Seconded by Dr. Jenkins.

Resolved that the General Secretary be directed in forwarding the Resolution touching Mr. Ivanow's conduct hereinbefore recorded, to write to Mr. Ivanow giving him a date and hour on or before which he is required to make over to the General Secretary the key of the box now on the Society's premises wherein Mr. Ivanow has stated he has left papers connected with his work for the Society and further requiring him to attend and hand over to the Society all documents connected with the preparation of the catalogue of Arabic manuscripts. Mr. Ivanow is to be informed that should he not attend at the date and hour mentioned, the box will be opened and the contents examined and dealt with in his absence.

Carried unanimously.

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Resolution No. 4.

Proposed by Dr. Jenkins.
Seconded by Dr. Baini Prashad.

Resolved that the President be asked to take over in the presence of some other member of the Council deputed by him and of the General Secretary all documents (connected with the Catalogue of the Arabic Manuscripts) which Mr. Ivanow is required to make over or which may on examination be found on opening the box referred to in Resolution No. 3 hereinbefore recorded.

Carried unanimously.

Resolution No. 5.

Proposed by Dr. Jenkins.
Seconded by Dr. Baini Prashad.

Resolved that Col. Barwell in consultation with Mr. B. B. Ghose be asked to settle the terms of such letters to Mr. Ivanow as may be required to give effect to the above Resolutions and that such draft letters be submitted to the President before despatch.

Carried unanimously.

Resolution No. 6.

Proposed by Col. Barwell.
Seconded by Dr. Baini Prashad.

Resolved that the General Secretary be empowered (in consultation with the President where practicable) to deal with any unforeseen emergency which may arise in connection with Mr. Ivanow and his work for the Society.

Carried unanimously.

No. 11. 24-2-30.

Special Meeting of Council. Mr. Ivanow's letters of the 1st and 8th March to the President of the Society were considered.

Proposed by Mr. K. C. De,
Seconded by Dr. Baini Prashad.

Resolved that the Council, after careful consideration of Mr. Ivanow's letters of the 1st and 8th March, 1930, addressed to the President of the Asiatic Society of Bengal, see no reason to reconsider their resolution No. 2 under item No. 11 passed by the Council of the Society in their meeting of the 24th February, 1930, and that if Mr. Ivanow does not submit his resignation on or before the 15th instant, his services be dispensed with with effect from the expiry of that date.

Resolved further that as an act of grace a sum of Rs. 900 being the equivalent of three months' salary be tendered to Mr. Ivanow.

Carried unanimously.

Proposed by Mr. K. C. De.
Seconded by Dr. Baini Prashad.

Resolved further that the General Secretary be authorised to communicate the above resolution to Mr. Ivanow.

Carried unanimously.

After an unanimous vote of thanks to Sir C. C. Ghose for his attendance, the Chairman declared the meeting terminated.

No. 1. 13-3-30.

Finance Committee No. 5 of 26-3-30. Payments to Mr. Ivanow. Recommended to sanction payment to Mr. Ivanow of the following alternative sums on fulfilment of the conditions attached to each :— Either (*a*) A sum of Rs. 1,650 (Sixteen Hundred and Fifty only) on

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condition of Mr. Ivanow furnishing a receipt 'in full settlement and discharge of all claims whatever against the Asiatic Society of Bengal'; or (*b*) A sum of Rs. 750 (Seven Hundred and Fifty only) on condition of Mr. Ivanow furnishing a receipt 'in full settlement and discharge of all claims against the Asiatic Society in respect of salary'. Col. Barwell to be requested kindly to consider these formulas and to suggest any desirable modification or addition.

Council order: Adopt with this modification that in Recommendation No. 5, paragraph (*a*), the word 'claims against' be changed to 'claims whatsoever against', and that only the first mentioned sum of Rs. 1,650 mentioned in para. (*a*) of the above Recommendation No. 5, be tendered to Mr. Ivanow.

Further resolved that the General Secretary be asked to acknowledge Mr. Ivanow's letter of the 28th March, 1930, in the following terms:—

'Dear Sir,

The Council directs me to acknowledge receipt of your letter of the 28th March, 1930, and to request you to call at the office of the Society on Friday the 4th April between 2 and 4 p.m. to receive payment of Rs. 1,650 (Sixteen Hundred and Fifty) as per terms of the Council resolution of the 13th March, 1930 (already communicated to you under my letter No. 653 of the 17th March, 1930). A cheque for this amount will be kept ready to be handed over to you on your signing a receipt in the following form:—

Received from the Asiatic Society of Bengal a sum of Rs. 1,650 (Sixteen Hundred and Fifty only) in full settlement and discharge of all claims whatsoever against the Asiatic Society of Bengal.

Yours faithfully,
(*Signature*),
General Secretary,
Asiatic Society of Bengal.'

No. 10. 1-4-30.

Further correspondence from Mr. Ivanow. Record. Also read a letter dated the 30th March, 1930, from Mr. Ivanow, addressed to Colonel Sewell, and placed before the Council at Mr. Ivanow's request. Record; a copy of this order to be forwarded to Mr. Ivanow for his information.

No. 14. 1-4-30.

The question of prolonged absence on sick leave of D. K. Samaddar, Pandit. The incumbent's services to be dispensed with. The Philological and General Secretaries in consultation to recommend a new man for appointment on probation.

No. 15. 1-4-30.

Questions relating to Mr. Ivanow:—

(*a*) Report payment of the allotted amount to Mr. Ivanow. Record.

(*b*) Further letter from Mr. Ivanow to the President in connection with the Arabic Catalogue. Suitable reply to be sent.

No. 10. 28-4-30.

Appointment Library Pandit. The Philological and General Secretaries jointly to make an appointment on probation.

No. 18. 26-5-30.

Finance Committee No. 4(6) of 10-12-30. Increment of salaries to staff. Recommendation: That the annual increments to staff be sanctioned as per attached schedule. Accepted by Council.

No. 6. 15-12-30.

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TAXES—

Report exemption of Income Tax on all the Society's investments. Record.
No. 3. 27-1-30.

Municipal Assessment. Report by the General Secretary on advice received from the Hon'ble Mr. Justice C. C. Ghose and the Secretary's interview with the Assessor, Calcutta Corporation. Record.
No. 12. 24-2-30.

The General Secretary reported the result of the hearing of Society's objections against the new Municipal Assessment. Record. A letter of thanks to be written to Sir C. C. Ghose for his help and advice in the matter.
No. 9. 25-8-30.

Finance Committee No. 7 of 19-11-30. Corporation Tax Bills. Recommendation : Pay, and recover advances from lessees. Accepted by Council.
No. 19. 24-11-30.

VISITS—

Letter from the Educational Secretary, Government of Bengal, enquiring whether arrangements can be made for the visit to the Society of H.E. The Turkish Ambassador during the cold weather. Action approved.
No. 3. 15-12-30.

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List of
Patrons,
Officers, Council Members, Members,
Fellows and Medallists
of the
Asiatic Society of Bengal,
On the 31st December, 1930.

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PATRONS OF THE ASIATIC SOCIETY OF BENGAL.

1926	..	H.E. Baron Irwin, of Kirby-under-Dale, G.M.S.I., G.M.I.E., Viceroy and Governor-General of India.
1927	..	H.E. Colonel Sir Francis Stanley Jackson, P.C., G.C.I.E., Governor of Bengal.

1910–1916	..	Lord Hardinge of Penshurst, K.G., P.C., G.C.B. G.C.M.G., G.C.S.I., G.C.I.E., K.C.M.G., G.C.V.O., K.C.V.O., C.B., C.V.O., I.S.O.
1916–1921	..	Lord Chelmsford, P.C., K.C.M.G., G.C.M.G., G.C.S.I., G.C.I.E., G.B.E.
1917–1922	..	Marquess of Zetland, P.C., G.C.S.I., G.C.I.E.
1921–1926	..	Earl of Reading, G.C.B., P.C., G.C.V.O., K.C.V.O., G.B.E.
1922–1927	..	Earl of Lytton, P.C., G.C.I.E.

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OFFICERS AND MEMBERS OF COUNCIL OF THE ASIATIC SOCIETY OF BENGAL DURING THE YEAR 1930.

Elections Annual Meeting.

President.

Lt.-Col. R. B. Seymour Sewell, M.A., M.R.C.S., L.R.C.P., Sc.D. (Cantab.), F.L.S., F.Z.S., I.M.S., F.A.S.B.

Vice-Presidents.

Rai Upendra Nath Brahmachari, Bahadur, M.D., M.A., Ph.D., F.A.S.B.
H. E. Stapleton, Esq., M.A., B.Sc., I.E.S., F.A.S.B.
B. De, Esq., M.A., I.C.S. (retired).
L. L. Fermor, Esq., O.B.E., D.Sc., A.R.S.M., F.G.S., M.Inst.M.M., F.A.S.B.

Secretaries and Treasurer.

General Secretary :—Johan van Manen, Esq., F.A.S.B.
Treasurer :—K. C. Mahindra, Esq., B.A. (Cantab.).
Philological Secretary :—Mahāmahopādhyāya Haraprasad Shāstrī, C.I.E., M.A., D.Litt., F.A.S.B.
Joint Philological Secretary :—Shams al-'Ulama Mawlawī M. Hidāyat Ḥusain, Khan Bahadur, Ph.D., F.A.S.B.
Natural History Secretaries. { Biology :—S. L. Hora, Esq., D.Sc. (Punjab), D.Sc. (Edinburgh), F.R.S.E. / Physical Science :—W. A. Jenkins, Esq., D.Sc. (Sheffield).
Anthropological Secretary :—B. S. Guha, Esq., M.A., Ph.D. (Harvard).
Medical Secretary :—Lt.-Col. R. Knowles, B.A. (Cantab.), M.R.C.S., L.R.C.P., I.M.S., F.A.S.B.
Library Secretary :—Lt.-Col. N. F. Barwell, M.C., M.A., Barrister-at-Law.

Other Members of Council.

Baini Prashad, Esq., D.Sc., F.R.S.E., F.Z.S., F.A.S.B.
Rev. A. Willifer Young.
B. B. Ghose. Esq., M.A., B.L.
Sir J. C. Coyajee, Kt., B.A. (Cantab.), LL.B., I.E.S.
Jas. Insch, Esq.
K. C. De, Esq., C.I.E., B.A., I.C.S. (retired).

APPOINTMENTS, TRANSFERS, ETC., DURING THE YEAR.

Dr. Baini Prashad, resigned in May, and was replaced by Mr. M. Mahfuz-ul Haq.
Mr. Johan van Manen was absent from 12th April, 1930 to 17th May, 1930 and Col. Sewell officiated for him during his absence.
Mr. Johan van Manen (Acting Treasurer) from 25th November, 1930 to 4th December, 1930, *vice* Mr. K. C. Mahindra, absent
Dr. Jenkins, absent from April for the remainder of the year.
Col. Sewell, absent for one month, November-December.
Dr. Guha, absent for two months, October–December.
Rev. Young, absent for a month, November.
Sir J. C. Coyajee, absent, three months, June–September.
Mr. K. C. De, absent, two and a half months, October–December.
Mr. Insch, absent, four months, April–August.
Dr. Brahmachari, absent, two months, June-July.

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OFFICERS AND MEMBERS OF COUNCIL OF THE ASIATIC SOCIETY OF BENGAL ELECTED FOR THE YEAR 1931.

President.

Lt.-Col. R. B. Seymour Sewell, M.A., M.R.C.S., L.R.C.P., Sc.D. (Cantab.), F.L.S , F.Z.S., I.M.S., F.A.S.B.

Vice-Presidents.

Rai Upendra Nath Brahmachari, Bahadur, M.A., M.D., Ph.D., F.A.S.B.

L. L. Fermor, Esq., O.B.E., D.Sc., A.R.S.M., F.G.S., M.Inst.M.M., F.A.S.B.

Sir R. N. Mookerjee, K.C.I.E., K.C.V.O., Hon. F.A.S.B.

The Hon'ble Mr. Justice C. C. Ghose, Kt., Barrister-at-Law.

Secretaries and Treasurer.

General Secretary :—Johan van Manen, Esq., C.I.E., F.A.S.B.

Treasurer :—K. C. Mahindra, Esq., B.A. (Cantab.).

Philological Secretary :—Mahāmahopādhyāya Haraprasad Shāstrī, C.I.E., M.A., D.Litt., F.A.S.B.

Joint Philological Secretary :—Shams al-'Ulama Mawlawī M. Hidāyat Ḥusain, Khan Bahadur, Ph.D., F.A.S.B.

Natural History Secretaries.
- Biology :—S. L. Hora, Esq., D.Sc. (Punjab), D.Sc. (Edinburgh), F R.S.E., F.A.S.B.
- Physical Science :—W. A. Jenkins, Esq., D.Sc. (Sheffield), I.E.S.

Anthropological Secretary :—The Rev. P. O. Bodding, M.A., F.A.S.B.

Medical Secretary :—Lt.-Col. R. Knowles, B.A. (Cantab.), M.R.C.S., L.R.C.P., I.M.S., F.A.S.B.

Library Secretary :—B. S. Guha, Esq., M.A., Ph.D. (Harvard).

Other Members of Council.

The Hon'ble Mr. B. B. Ghose, M.A., B.L.

Sir J. C. Coyajee, Kt., B.A. (Cantab.), LL.B., I.E.S

Jas. Insch, Esq.

K. C. De, Esq., C.I.E., B.A., I.C.S. (retired).

M. Mahfuz-ul Haq, Esq., M.A.

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ORDINARY MEMBERS.

R=Resident. N=Non-Resident. F=Foreign. A=Absent. L=Life.

An Asterisk is prefixed to names of Ordinary Fellows of the Society.

Date of Election.		
6-5-25	R	**Abbasi,** MOHAMMAD AMIN, *Maulavi, Assistant Superintendent.* Hooghli Madrassah, Hooghli.
5-4-22	R	**Abdul Ali,** ABUL FAIZ MUHAMMAD, M.A., M.R.A.S., F.R.S.L., F.R.G.S., F.R.H.S. 3, Turner Street, Calcutta.
7-3-27	R	**Abdul Kadir,** A. F. M., M.A. (ALLAHABAD), MAULVIE FAZIL (PUNJAB), MADRASSAH FINAL (CALCUTTA), *Professor, Islamia College.* Wellesley Street, Calcutta.
2-11-25	N	**Acharya,** PARAMANANDA, B.SC., *Archæological Scholar.* Mayurbhanj State, Baripada.
2-3-21	R	*__Acton,__ HUGH WILLIAM, M.R.C.S., L.R.C.P., F.A.S.B., LT.-COL., I.M.S. School of Tropical Medicine and Hygiene, Central Avenue, Calcutta.
7-12-25	N	**Afzal,** SYED MOHAMAD, KHAN BAHADUR, *Offg. Civil Surgeon, Bihar and Orissa Medical Service.* Civil Surgeon, Daltonganj.
4-3-29	R	**Agate,** PURUSHOTTAM NARAYAN, B.SC., *Engineer.* 5, Council House Street, Calcutta.
2-3-21	R	**Agharkar,** SHANKAR PURUSHOTTAM, M.A., PH.D., F.L.S., *Professor of Botany, University College of Science.* 35, Ballygunge Circular Road, Calcutta.
4-3-29	R	**Ahmad,** DABIRUDDIN, HADJI, CAPTAIN, O.B.E., L.M.S., A.I.R.O, *Teacher of Anatomy, Campbell Medical School.* 21-2-C, Haris Mukherjee Road, Bhawanipore, Calcutta.
7-4-30	N	**Ahmad,** SYED KHALIL, *Provincial Service (retired).* Zafar Manzil, Gaya.
6-6-17	N	**Aiyangar,** K. V. RANGASWAMI, RAO BAHADUR, M.A., *Director of Public Instruction, Travancore.* Trivandrum, Travancore.
6-12-26	N	**Aiyangar,** S. KRISHNASWAMI, M.A., PH.D., M.R.A.S., F.R. HIST.S., *Professor, University of Madras.* "Sripadam", 143, Brodies Road, Mylapore, Madras, S.
1-12-20	N	**Akbar Khan,** THE HON'BLE MAJOR NAWAB MOHAMMED, C.I.E., I.A., *Khan of Hoti.* Hoti, N.-W.F.P.
6-5-29	R	**Aken,** CAREL EMANUEL VAN, *Manager, Java Bengal Line, Vice-Consul for the Netherlands.* c/o Messrs. Java Bengal Line, Clive Buildings, Calcutta.
3-7-12	N	**Andrews,** EGBERT ARTHUR, B.A. Tocklai Experimental Station, Cinnamara, Jorhat, Assam.
1-4-29	R	**Asadullah,** K. M., B.A., *Librarian.* Imperial Library, Calcutta.

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Date of Election.		
5-11-24	R	**Asaduzzaman,** KHAN BAHADUR. 42, Beniapukur Road, Calcutta.
3-3-30	L	**Ashton,** HUBERT SHORROCK, *Merchant.* Trueloves, Ingatestone, Essex, England.
3-11-30	R	**Austin,** GEORGE JOHN, *Sanitary Engineer, Messrs. J. B. Norton & Sons, Ltd.* Norton Building, Lalbazar, Calcutta.
4-4-17	N	**Awati,** P. R., B.A. (CANTAB.), D.I.C., I.E.S., *Professor of Zoology.* Royal Institute of Science, Mayo Road, Bombay.
3-3-14	L	**Bacot,** J., Boulevard Saint-Antoine, 61, Versailles, Seine-et-Oise, France.
1-11-26	R	**Bagchi,** PROBODH CHANDRA, M.A., DR.-ES-LETTRES (PARIS), *Member of the A.S. of Paris; Lecturer, Calcutta University.* 9, Rustomjee Street, Ballygunge, Calcutta.
1-3-26	R	**Bagnall,** JOHN FREDERICK, *Consulting Engineer.* 6, Wood Street, Calcutta.
2-4-24	N	**Bahl,** K. N., D.SC., D.PHIL., *Professor of Zoology, Lucknow University* Badshabagh, Lucknow.
5-11-24	N	**Baidil,** A. MANNAN, *Assistant Superintendent, Dormitory.* Patna College, Bankipur.
7-3-27	N	**Bake,** A. A., *Doctorandus Or. Lit.* P.O. Santiniketan.
2-4-19	R	**Bal,** SURENDRA NATH, M.SC., F.L.S., *Curator, Industrial Section, Indian Museum.* 1, Sudder Street, Calcutta.
7-1-25	R	**Banerjee,** M. N., C.I.E., B.A., M.R.C.S., L.S.A., *Ex-Principal, Carmichael Medical College; Member of the Syndicate, Calcutta University.* 32, Theatre Road, Calcutta.
6-2-18	R	**Banerjee,** NARENDRA NATH, M.I.P.O.E.E., A.M.I.E., *Divisional Engineer, Telegraphs.* 42/1, Ritchie Road, Ballygunge, Calcutta.
6-12-26	R	**Banerjee,** S. N., *Barrister-at-Law,* P-307, New Circular Road, Calcutta.
1-3-26	R	**Banerjee,** WOOMESH CHANDRA, *Colliery Proprietor and Merchant.* 7, Swallow Lane, Calcutta.
1-7-29	N	**Banerji,** BIJAN BEHARI, M.SC. (ALL.), PH.D. (LOND.), F.P.S., A.INST.P., *Lecturer in charge of Department of Physics and Mathematics.* Indian School of Mines, Dhanbad.
1-3-05	R	**Banerji,** MURALIDHAR. Sanskrit College, Calcutta.
5-3-24	R	**Bannerjee,** P. N., M.A. (CANTAB.), A.M.I.E., F.C.U., *Civil Engineer.* 12, Mission Row, Calcutta.
6-5-25	R	**Baral,** GOKUL CHANDRA, *Zemindar, Municipal Councillor and Honorary Presidency Magistrate.* 3, Hidaram Banerjee Lane, Calcutta.
1-11-26	N	**Barhut,** THAKUR KISHORESINGH JI, *State Historian of Patiala Govt.* History and Research Department, Patiala.
4-5-21	A	**Barnardo,** F. A. F., C.B.E., C.I.E., M.D., F.R.C.S., F.R.C.E., LT.-COL., I.M.S. Civil Surgeon, Hughli.
7-12-21	R	**Barua,** B. M., M.A., D.LITT., *Lecturer, Calcutta University.* Chandernagore, E.I.Ry.
3-12-23	R	**Barwell,** N. F., LT.-COL. (RETD.), M.C., M.A., *Bar.-at-Law.* First Floor, 10, Middleton Street, Calcutta (*and*) Aylmerton House, Aylmerton, Norfolk, England.
7-5-28	R	**Basak,** SARAT CHANDRA, M.A., D.L., *Advocate, High Court.* 24, Ashutosh Mukherjee Road, Calcutta.
6-1-30	R	**Bassewitz,** COUNT, *Consul-General for Germany.* 227-1, Lower Circular Road, Calcutta.

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Date of Election.		
4-3-29	R	**Basu,** Bejoy K., M.A., B.L., *Solicitor, High Court.* 50, Goaltule Road, Bhawanipore, Calcutta.
3-12-24	R	**Basu,** Jatindra Nath, M.A., M.L.C., *Solicitor.* 14, Baloram Ghose Street, Calcutta.
1-3-26	R	**Basu,** Narendra Kumar, M.L.C., *Advocate, High Court.* 12, Ashu Biswas Road, Bhawanipore, Calcutta.
2-1-28	R	**Basu,** Narendra Mohun, M.A., *Professor of Physiology.* Presidency College, Calcutta.
7-5-28	R	**Basu,** Narendranath, L.M.S., *Professor of Obstetrics and Gynæcology, Carmichael Medical College.* 7, Raja Bagan Street, Calcutta.
7-1-29	R	**Basu,** Sarat Chandra, *Advocate.* 143, Dhurrumtollah Street, Calcutta.
7-7-09	N	**Bazaz,** Rangnath Khemraj, *Proprietor, Shri Venkateshwar Press.* 7th Khetwadi, Bombay No. 4.
3-7-95	L	**Beatson-Bell,** Rev. Sir Nicholas Dodd, K.C.S.I., K.C.I.E. Edgeclisse, St. Andrews, Scotland.
4-3-25	R	**Benthall,** E. C., *Merchant.* 37, Ballygunge Park, Calcutta.
7-4-09	L	***Bentley,** Charles A., C.I.E., M.B., D.P.H., D.T.M. & H., F.A.S.B., *Professor of Hygiene.* University of Egypt, Cairo.
4-11-29	R	**Berthoud,** George Felix, *Stock-broker* 7, Hungerford Street, Calcutta.
4-6-28	N	**Bhadra,** Satyendra Nath, Rai Bahadur, M.A., *Principal.* Jagannath Intermediate College, Dacca.
3-5-26	N	**Bhagwant Rai,** Munshi Rai, Sardar, M.P.H.S., *Retired District Judge.* Bhagwant Ashram, Patiala.
1-8-17	R	***Bhandarkar,** Devadatta Ramkrishna, M.A., PH.D., F.A.S.B. 35, Ballygunge Circular Road, Calcutta.
6-6-23	N	**Bhanot,** Kali Das, *Late Superintendent, Forests, Jubbal State.* Mokandpur, Dt. Jullundur.
5-4-26	N	**Bhatia,** M. L., M.SC., *Lecturer in Zoology.* Lucknow University, Lucknow.
4-3-25	N	**Bhatnagar,** Jagmohan Lal, M.A., *Professor of History.* Randhir College, Kapurthala.
2-4-28	R	**Bhattacharjee,** Nibaran Chandra, M.A., *Professor of Physiology, Presidency College.* 19, Hindusthan Road, Ballygunge, Calcutta.
7-7-09	R	**Bhattacharji,** Shib Nath, M.B. 80, Shambazar Street, Calcutta.
4-11-08	R	**Bhattacharya,** Bisvesvar, B.A., M.R.A.S., B.C.S. 16, Townshend Road, Bhawanipore, Calcutta.
7-2-27	N	**Bhattacharya,** D. R., M.SC., PH.D., D.SC., F.R.M.S., F.Z.S., *Head of the Department of Zoology, Allahabad University.* 15, George Town, Allahabad.
1-2-22	N	**Bhattacharya,** Vidhushekhara, Pandit, *Principal, Vidyabhavana.* Visvabharati, Santiniketan, Birbhum.
7-7-24	L	**Bhattacharyya,** Binoytosh, M.A., PH.D., *General Editor, Gaekwad's Oriental Series, and Librarian, Oriental Collections, Baroda State.* Baroda.
9-6-22	R	**Bhattacharyya,** Sivapada, M.D. School of Tropical Medicine and Hygiene, Central Avenue, Calcutta.
4-6-28	N	**Bhattasali,** Nalini Kanta, M.A., *Curator, Dacca Museum.* Ramna, Dacca.
4-2-25	N	**Bhor,** Shyam Chand, *Accountant.* Bhopal Chowk, Bhopal.
5-3-28	R	**Biswas,** Charu Chandra, M.A., B.L., *Advocate, High Court.* 58, Puddopukur Road, P.O. Elgin Road, Calcutta.
1-8-23	R	**Biswas,** Kalipada, M.A. Royal Botanic Gardens, Sibpur, Howrah.

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Date of Election.		
3-1-27	N	**Bivar,** Hugh Godfrey Stuart, I.C.S., *District and Sessions Judge.* Murshidabad.
6-12-22	A	**Blackett,** Sir Basil Phillott, K.C.B., *Finance Member, Government of India.* Delhi.
1-2-93	L	***Bodding,** Rev. P. O., M.A. (Christ.), F.A.S.B. Mohulpahari, Santhal Parganas.
3-7-12	N	**Bomford,** Trevor Lawrence, M.B., B.S., M.R.C.S., L.R.C.P., LT.-COL., I.M.S. Civil Surgeon, Dacca.
4-3-29	R	**Boral,** Arun Prokash, *Merchant and Landholder,* 9-1, Sikdarpara Street, Calcutta.
3-7-18	R	**Bose,** Charu Chandra, B.A., M B., *Professor of Pathology, Carmichael Medical College.* 52/2, Mirzapur Street, Calcutta.
7-2-27	R	**Bose,** Debendra Mohan, M.A. (Cal.), B.Sc. (Lond.), Ph.D. (Berlin), *Professor of Physics.* 92/3, Upper Circular Road, Calcutta.
6-5-25	R	**Bose,** H. M., B.A., *Bar.-at-Law.* 177, Lower Circular Road, Calcutta.
6-3-95	R	***Bose,** Sir Jagadis Chandra, Kt, C.S.I., C.I.E., F.R.S., M.A., D.Sc., F.A.S.B. Bose Institute, 91, Upper Circular Road, Calcutta.
5-4-22	N	**Bose,** Jogesh Chandra, Vidyabinode, *Landholder.* Bhagwanpur, Dt. Midnapore.
6-7-25	R	**Bose,** Manmatha Mohan, M.A., *Professor, Scottish Churches College.* 19, Gokul Mitra Lane, Hatkhola, Calcutta.
5-11-28	N	**Bose Mullick,** G. N., M.A., *Professor of History.* Meerut College, Meerut, U.P.
6-7-10	A	**Botham,** The Hon'ble Mr. Arthur William, C.S.I., C.I.E., I.C.S., *Vice-President, Assam Executive Council.* Shillong.
2-11-25	A	**Bradshaw,** Eric Jean, B.A., B.A.I., F.G.S., *Resident Geologist.* Yenangyaung, Burma.
6-12-26	R	**Brahmachari,** Bipin Bihari, D.P.H., *Asst. Director of Public Health, Bengal.* 283, Ballygunge Avenue, Calcutta.
4-1-26	A	**Brahmachari,** Indu Bhusan, *University Lecturer.* 110-2 Dhakuria Road, Kalighat, Calcutta.
1-1-08	L	***Brahmachari,** Upendra Nath, Rai Bahadur, M.A., Ph.D., M.D., F.A.S.B. 82/3, Cornwallis Street, Calcutta.
7-11-27	N	**Brahmachary,** Sarat Ch., Rai Bahadur, M.A., B.T., *Superintendent.* Kasba Road, Ballygunge, P.O. Dhakuria, Calcutta.
4-4-27	R	**Bridge,** Rev. Peter Gonzalez, D.D., *Principal, St. Paul's College.* 33/1, Amherst Street, Calcutta.
3-7-07	L	***Brown,** John Coggin, O.B.E., D.Sc., F.G.S., M.I.M.E., M.Inst.M.M., M.I.E., F.A.S.B. Geological Survey of India, Indian Museum, Calcutta.
6-10-09	A	**Brown,** Percy, A.R.C.A. Government School of Art. Calcutta.
5-3-24	R	**Browne,** H., Major, M.B.E., A.R.I.B.A., *Architect.* Messrs. Martin & Co., 12, Mission Row, Calcutta.
2-7-24	F	**Browne,** Rev. L. E., M.A. 21, The Drive, Northampton, England.
6-10-09	L	***Brühl,** Paul Johannes, I.S.O., D.Sc., F.C.S., F.G.S., F.A.S.B. 2, Convent Road, Bangalore.
8-1-96	F	***Burn,** Sir Richard, Kt., C.S.I., F.A.S.B. 9, Staverton Road, Oxford, England.
2-4-13	R	**Calder,** Charles Cumming, B.Sc., F.L.S. Royal Botanic Gardens, Sibpur, Howrah.

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7-1-29	R	**Campbell Forrester,** Mrs. Florence, *Fellow of the Archæological Society of America.* Y.W.C. Association, 134, Corporation Street, Calcutta; 17 0, R.I. Avenue, Washington, D.C., U.S.A.
4-11-29	R	**Campbell,** G. R., *Partner, Messrs. Mackinnon Mackenzie & Co.* 16, Strand Road, Calcutta.
7-2-27	R	**Captain,** Dara Manekshaw, *Merchant.* 1, Corporation Street, Calcutta.
1-9-20	R	**Chakladar,** Haran Chandra, M.A. 28/4, Srimohan Lane, Kalighat, Calcutta.
4-7-27	R	**Chakravarti,** Chintaharan, M.A., *Lecturer, Bethune College.* 28/3, Sahanagar Road, Kalighat, Calcutta.
3-2-30	N	**Chakravarti,** M. N., M.Sc., *A.T.S. at Delhi.* 5053, Connaught Place, New Delhi.
3-3-09	R	**Chakravarti,** Nilmani, M.A. 103-A, Kalighat Road, Calcutta.
3-1-27	N	**Chakravarty,** Niranjanprasad, Ph.D. (Cantab.), *Government Epigraphist.* Office of the Government Epigraphist, Ootacamund, Nilgiris, S. India.
6-1-30	R	**Chakraverti,** Shrish Chandra, B.L., *Attorney-at-Law, High Court, Calcutta.* 2, Marquis Street, Calcutta.
1-9-20	R	***Chanda,** Ramaprasad, Rai Bahadur, B.A., F.A.S.B. P. 463, Manoharpukur Road, Kalighat, Calcutta.
3-1-06	L	**Chapman,** John Alexander. *Librarian, Rampur State Library.* Rampur.
7-5-28	R	**Chatterjea,** Sir Nalini Ranjan, Kt., M.A., B.L., *Retired Judge & sometime acting Chief Justice, Calcutta High Court.* 91A, Harish Mukerjee Road, Bhawanipore, Calcutta.
7-2-27	R	**Chatterjee,** Ashoke, B.A. (Cal.), B.A. (Cantab.), *Editor, "Welfare."* 91, Upper Circular Road, Calcutta.
27-10-15	F	**Chatterjee,** Sir Atul Chandra, K.C.I.E., K.C.S.I., *High Commissioner for India.* Withdean, Cavendish Road, Weybridge, Surrey, England.
1-10-20	R	**Chatterjee,** Nirmal Chandra. 52, Haris Mukerjee Road, Bhawanipore, Calcutta.
4-7-27	R	**Chatterjee,** Patitpabon, M.A., B.L., *Vakil, High Court.* 84, Harrison Road, Calcutta.
6-8-28	R	**Chatterjee,** Sushil Chandra, M.A., *Government Research Scholar.* Presidency College, Calcutta.
7-5-28	R	**Chatterji,** Kedar Nath, B.Sc. (London), A.E.C.S. (London). 2-1, Townshend Road, Calcutta.
4-1-26	R	**Chatterji,** Kshitish Chandra, M.A., *Lecturer in Comparative Philology, Calcutta University.* 61-A, Ramkanta Bose Street, Baghbazar, Calcutta.
7-6-11	R	**Chatterji,** Karuna Kumar, Lt.-Col., I.T.F., M.C., V.H.A.S. 6/1, Wood Street, Calcutta.
5-3-24	R	**Chatterji,** Mohini Mohan, M.A., B.L., *President, Incorporated Law Society of Calcutta.* 33, McLeod Street, Calcutta.
6-8-24	R	**Chatterji,** Suniti Kumar, M.A., D.Lit., *Khaira Professor, Calcutta University.* 21, Hindusthan Road, Ballygunge, Calcutta.
5-11-24	R	**Chattopadhyay,** K. P., M.A. (Cantab.), *Education Officer, Corporation of Calcutta.* 20, Mayfair, Ballygunge, Calcutta.
2-11-25	N	**Chattopadhyaya,** Kshetresa Chandra, M.A., *Lecturer in Sanskrit.* Allahabad University, Allahabad.
2-1-28	N	**Chaube,** Ram Kumar, Pandit, M.A., L.T. (Benares), M.A. (Cal.), M.R.A.S. (Lond.), *Member, Benares Mathematical Society.* Azmatgarh Palace, Benares.

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28-9-93	R	*Chaudhuri, B. L., B.A., D.SC. (EDIN.), F.R.S.E., F.L.S. (LOND.), F.A.S.B. 9A, South Road, Entally, Calcutta *(and)* Sherpur Town, Mymensingh.
*1-4-14	A	Chaudhuri, GOPAL DAS. 32, Beadon Row, Calcutta.
1-2-26	N	Chaudhuri, HARAPRASAD, PH.D., *Reader in Botany.* Punjab University, Lahore.
4-3-25	R	Chaudhuri, J., B.A. (OXON.), M.A. (CAL.), *Barrister-at-Law.* 34, Ballygunge Circular Road, Calcutta.
3-8-25	N	Chhibber, H. L., M.SC., F.G.S., F.R.G.S., *Asst. Superintendent, Geological Survey of India, Burma Party.* 230, Dalhousie Street, Rangoon.
6-12-26	R	Chokhani, SREENARAYAN, *Secretary, Shree Hanuman Pustkalaya.* 8, New Ghuseri Road, Salkea, Howrah.
5-12-23	R	Chopra, B. N., D.SC., *Asst. Superintendent, Zoological Survey of India.* Indian Museum, Calcutta.
1-2-22	R	Chopra, R. N., M.B., LT.-COL., I.M.S., *Professor of Pharmacology.* School of Tropical Medicine and Hygiene, Central Avenue, Calcutta.
5-11-28	R	Choprha, GOPICHAND, *Student.* 47, Khangraputty, Calcutta.
7-5-28	R	Chowdhury, A. N., B.SC., *Zemindar.* 42, Hem Chandra Street, Kidderpore, Calcutta.
5-12-27	L	Chowdhury, CHHAJURAM, C.I.E., M.L.C., 21, Belvedere Road, Calcutta.
2-4-28	R	Chowdhury, RAI JATINDRANATH, *Zemindar.* 36, Russa Road, Tollygunge, Calcutta.
3-7-07	L	*Christie, WILLIAM ALEXANDER KYNOCH, B.SC., PH.D., M.INST.M.M., F.A.S.B. Geological Survey of India, Indian Museum, Calcutta.
3-11-09	N	*Christophers, SAMUEL RICKARD, C.I.E., O.B.E., F.R.S., F.A.S.B., M.B., LT.-COL., I.M.S. Central Research Institute, Kasauli.
1-9-15	R	Cleghorn, MAUDE LINA WEST (MISS), F.L.S., F.E.S. 12, Alipur Road, Calcutta.
2-5-27	R	Clegg, EDWARD LESLIE GILBERT, B.SC., *Assistant Superintendent, Geological Survey of India.* Indian Museum, Calcutta.
4-11-29	R	Cohen, D. J., M.L.C., *Honorary Presidency Magistrate, Councillor, Corporation of Calcutta, Proprietor, Messrs. Moberly & Co.* 11, Camac Street, Calcutta.
2-5-23	A	Collenberg, BARON H. RUDT VON, *Consul-General for Germany.* 2, Store Road, Calcutta.
1-11-26	R	Collet, ARTHUR LOWE, *Solicitor.* Messrs. Orr Dignam & Co., 32, Dalhousie Square, Calcutta.
1-12-20	A	Connor, SIR FRANK POWELL, KT., LT.-COL., I.M.S., D.S.O., F.R.C.S., *Professor of Surgery, Medical College.* 2, Upper Wood Street, Calcutta.
5-5-30	R	Cooper, G. A. P., *Assistant, Messrs. Macneil & Co.* 2, Fairlie Place, Calcutta.
3-6-24	R	Cooper, H., *Manufacturing Chemist.* 18, Convent Road, Calcutta.
4-11-29	R	*Cotter, GERALD DE PURCELL, B.A., SC.D., M.INST.M.M., F.G.S., F.A.S.B., *Superintendent, Geological Survey of India.* Indian Museum, Calcutta.
3-8-25	R	Coyajee, SIR J. C., KT., B.A. (CANTAB.), LL.B., I.E.S., *Professor, Presidency College.* 2B, Camac Street, Calcutta.
25-8-87	R	Criper, WILLIAM RISDON, F.C.S., F.I.C., A.R.S.M. Konnagar.

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2-11-25	R	**Crookshank,** HENRY, B.A., B.A.I. (DUBLIN), *Assistant Superintendent, Geological Survey of India.* Indian Museum, Calcutta.
4-3-25	R	**Das,** AJIT NATH, M.R.A.S., F.Z.S., *Zemindar.* 24, South Road, Entally, Calcutta.
2-4-24	R	**Das,** BIRAJ MOHAN, M.A. (CAL.), M.SC. (LOND.), *Superintendent, Calcutta Research Tannery.* 2/1, Kirti Mitter Lane, Calcutta.
5-3-28	R	**Das,** KEDARNATH, C.I.E., M.D., *Principal, Carmichael Medical College.* 22, Bethune Row, Calcutta.
2-7-28	R	**Das,** PROBODH KUMAR, M.A., B.L. P-84, Park Street Extension, Calcutta.
3-12-24	R	**Das,** SURENDRA NATH, M.B., *Medical Practitioner.* 67, Nimtala Ghat Street, Calcutta.
1-9-15	R	**Das-Gupta,** HEM CHANDRA, M.A., F.G.S., *Professor, Presidency College.* 60, Chakrabere Road, North, Calcutta.
6-9-22	R	**Das-Gupta,** SURENDRA NATH, M.A., PH.D., *Professor of Sanskrit and Philosophy, Presidency College.* 104, Bakul Bagan Road, Calcutta.
2-1-28	N	**Dastidar,** NALINI KANTA RAY, RAI BAHADUR, *Zemindar.* Sylhet, Assam.
1-3-26	R	**Datta,** HIRENDRA NATH, M.A., B.L., *Solicitor, High Court.* 139, Cornwallis Street, Calcutta.
3-6-25	F	**Datta,** S. K., B.A., M.B., CH.B. (EDIN.). 2, Rue Général Dafour, Geneva, Switzerland.
6-8-24	L	**Davies,** L. M., MAJOR, *Royal Artillery.* c/o The Lloyds Bank, King's Branch, 6, Pall Mall, London.
2-8-26	R	**De,** BRAJENDRANATH, M.A., I.C.S. (RETIRED). 11, Lower Rawdon Street, Calcutta.
4-3-29	R	**De,** J. C., M.B., MAJOR, I.M.S., *Professor of Clinical Medicine, Medical College.* 13, Camac Street, Calcutta.
4-2-29	F	**de Gasparin,** EDITH, *Art Student.* 51, Rue de Varenne, Paris VIIe.
19-9-95	L	**De,** KIRAN CHANDRA, C.I.E., B.A., I.C.S. (RETIRED). 21, Camac Street, Calcutta.
3-1-27	R	**De,** SATISH CHANDRA, M.A., B.L., I.E.S. (RETIRED). 11, Ray Street, Elgin Road P.O., Calcutta.
6-6-17	R	**Deb,** KUMAR HARIT KRISHNA, M.A., *Zemindar.* 8, Raja Nabokishen Street, Calcutta.
7-9-21	R	**Deb,** KUMAR PROFULLA KRISHNA, *Zemindar.* 106/1, Grey Street, Calcutta.
4-3-25	R	**Deb,** RAJA KSHITINDRA, RAI MAHASAI OF BANSBERIA RAJ. 21/E, Rani Sankari Lane, Kalighat, Calcutta.
4-3-29	R	**Deb,** PASUPATI NATH, *Zemindar and Landholder, Honorary Presidency Magistrate.* P-16, Chittaranjan Avenue, North, Calcutta.
5-12-27	L	**Dechhen,** H.H. MAHARANI KUNZANG, *Maharani of Sikkim.* Gangtok, Sikkim.
5-5-30	N	**Deo,** PRATAP CHANDRA BHANJ, *Maharajah, Ruler of Mayurbhanj State.* P.O. Baripada, Mayurbhanj, B.N.R.
7-12-25	R	**Derviche-Jones,** ARTHUR DANIEL, LT.-COL., D.S.O., M.C., *Solicitor.* c/o Messrs. Orr Dignam & Co., Standard Buildings, Dalhousie Square, Calcutta.
4-2-29	N	**Dev,** RAJA RAMCHANDRA, *Superintendent.* Jagannath Temple, Puri.

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4-4-27	R	**Dewick,** Rev. Edward Chisholm, m.a. (Cantab.), *National Literature Secretary, Y.M.C.A. of India, Burmah and Ceylon.* 5, Russell Street, Calcutta.
4-5-10	L	**Dhavle,** Sankara Balaji, b.a., i.c.s., *Judge, Patna High Court.* Patna.
7-3-27	F	**Dikkers,** Frederik Gerhard. c/o Koninklijke Weefgoederenfabriek, v/h C. F. Stork and Co., Hengelo (o), Holland.
4-8-20	R	**Dikshit,** Kashinath Narayan, m.a., *Superintendent, Archæological Survey of India.* Indian Museum, Calcutta.
5-1-98	R	**Dods,** William Kane, *Agent, Hongkong and Shanghai Banking Corporation.* 6, Minto Park, Alipur, Calcutta.
6-1-30	N	**Douglas,** Robert, *Indian Civil Service, District Magistrate.* Burdwan.
2-7-02	L	**Doxey,** Frederick. 63, Park Street, Calcutta.
6-8-28	R	**Drummond,** J. G., m.a., i.c.s., j.p.. *Secretary, Local Self-Government, Government of Bengal.* 4, Theatre Road, Calcutta
1-7-29	R	**Dunn,** John Alexander, d.sc., d.i.c , f.g.s , *Assistant Superintendent, Geological Survey of India.* Indian Museum, Calcutta.
7-1-25	R	**Dutt,** Kiran Chandra, *Zemindar.* Lakshmi Nibas, 1, Lakshmi Dutt Lane, Baghbazar, Calcutta.
7-4-20	R	**Dutt,** Kumar Krishna. 10, Hastings Street, Calcutta.
2-1-28	N	**Dutt,** Promode Chandra, Rai Bahadur, *Pleader, Ex-Minister for Local Self-Government, Assam.* Sylhet, Assam.
5-3-28	R	**Eberl,** Otto, Dr. Jur., *Vice-Consul for Germany.* 2, Store Road, Ballygunge, Calcutta.
1-2-26	A	**Edwards,** C. A. Henry, *Deputy Chief Engineer, E. B. Ry.* 8, Belvedere Park, Alipore, Calcutta.
4-11-29	R	**Edwards,** L. Brooke, *Manager in India, The Baldwin Loco. Works of Philadelphia, U.S.A.* 5, Dalhousie Square, Calcutta.
6-8-28	F	**Elberg,** (Mrs.) Adeline Adrienne Johanna (*née* Rudolph). c/o Netherlands Trading Society, Hongkong.
6-2-28	R	**Evans,** Frank Lucas, *Insurance Manager, Century Insurance Co.* 4, Lyons Range, Calcutta.
6-2-28	L	**Ezra,** Sir David, kt., f.z.s., m.b.o.u. 3, Kyd Street, Calcutta.
2-12-29	R	**Fawcus,** Louis Reginald, b.a. (Cantab.), *Indian Civil Service.* United Service Club, Calcutta.
2-5-27	N	**Feegrade,** E. S., m.d., *Indian Medical Department, Special Malaria Officer, Burma.* Sir Harcourt Butler Institute of Public Health, 2, Theatre Road, Rangoon.
3-8-04	R	***Fermor,** Lewis Leigh, o.b.e., a.r.s.m., d.sc., f.g.s., f.a.s.b. Geological Survey of India, Indian Museum, Calcutta.
31-10-06	N	**Finlow,** Robert Steel, c.i.e., b.sc., f.i.c., *Director of Agriculture, Bengal.* Ramna, Dacca.
2-12-29	R	**Fisher,** The Rev. Bishop Frederick B., s.t.b., ph.d., d.d., ll.d., f.r.s.s., *Bishop, Methodist Episcopal Church.* 3, Middleton Street, Calcutta.
7-11-27	R	**Fitzgerald,** T. J., *Manager, U.S. Rubber Export Co.* 5, Hastings Street, Calcutta.

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4-1-26	R	**Fleming,** ANDREW, *General Manager for the East, Minimax, Ltd.* 59, Park Street, Calcutta.
5-11-13	R	**Fox,** CYRIL S., B.SC., M.I.M.E., F.G.S. Geological Survey of India, Indian Museum, Calcutta.
2-4-19	N	**Friel,** RALPH, I.C.S. Silchar, Assam.
7-3-27	F	**Fukushima,** NAOSHIRO, *Assistant in the Sanskrit Seminary.* Imperial University, Tokio, Japan.
5-3-28	R	**Fullerton,** GEORGE MACFARLAND, B.SC., *Banking.* c/o The National City Bank of New York, 4, Clive Street, Calcutta.
4-1-26	N	**Gaffar,** ABDUL, KHAN BAHADUR, *Deputy Collector.* Midnapur.
5-11-28	R	**Galstaun,** JOHN CARAPIET, *Merchant and Landholder.* 234/4, Lower Circular Road, Calcutta.
1-11-26	R	**Galstaun,** SHANAZAN, M.A., D.M.R.E., M.R.C.S., L.R.C.P., *Medical Practitioner, Radiologist, Medical College Hospital.* 39, Theatre Road, Calcutta.
6-10-09	R	**Gangoly,** ORDHENDRA COOMAR, B.A. 12/1, Gangoly Lane, Calcutta.
2-11-25	R	**Gee,** EDWARD ROWLAND, B.A. (CANTAB.), *Asst. Superintendent, Geological Survey of India.* Indian Museum, Calcutta.
7-5-28	R	**Ghosal,** UPENDRA NATH, M.A., PH.D., *Professor of History, Presidency College.* 12, Badur Bagan Row, Calcutta.
2-7-24	R	**Ghose,** BEPIN BEHARI, M.A., B.L., *Judge, High Court.* 11, Dover Lane, Ballygunge, Calcutta.
5-4-26	R	**Ghose,** BIMAL CHANDRA, *Barrister-at-Law.* 27/1, Haris Mukherjee Road, Calcutta.
2-4-24	R	**Ghose,** SIR CHARU CHANDRA, KT., *Barrister-at-Law, Judge, High Court.* 10, Debendra Ghose Road, Bhawanipore, Calcutta.
1-4-29	R	**Ghose,** DEB PROSONNO, *Zemindar.* 75, Beadon Street, Calcutta.
7-1-29	R	**Ghose,** MOHIM CHANDRA, B.A. (CAL.), M.A. (CANTAB.), *Barrister-at-Law (Inner Temple).* Indian Civil Service, Bengal Secretariat, Calcutta.
3-12-24	R	**Ghose,** SUSHIL CHANDRA, B A., *Deputy Magistrate.* 1, Sikdarbagan Street, Calcutta.
7-2-27	N	**Ghosh,** JNANENDRA CHANDRA, D.SC., *Professor of Chemistry.* Dacca University, Ramna, Dacca.
2-4-24	R	**Ghosh,** K., D.T.M., D.P.H. (CANTAB.), L.M.S., *Medical Practitioner.* 45, Creek Row, Calcutta.
5-12-27	R	**Ghosh,** KISOR, M.SC., *Solicitor.* 10, Hastings Street, Calcutta.
6-2-18	L	**Ghosh,** EKENDRA NATH, M.D., M.SC., F.Z.S., F.R.M.S., *Professor of Biology, Medical College.* 66, Cornwallis Street, Calcutta.
7-3-27	R	**Ghosh,** PHANINDRA NATH, M.A., PH.D., SC.D. (PADUA), *Sir Rashbehary Ghosh Professor of Applied Physics, University of Calcutta.* 92, Upper Circular Road, Calcutta.
5-5-20	R	**Ghosh,** SUKHENDRA NATH, B.A. (CAL.), B.SC. (GLAS.), M.I.C.E., F.R.SAN.I., M.I.E., *Executive Engineer, P.W.D., Central Division, Bengal.* 7, Heysham Road, Calcutta.
4-9-12	R	**Ghosh.** TARAPADA. 14, Paddapukur Street, Kidderpore, Calcutta.
1-2-26	R	**Ghuznavi,** A. H., M.L.A., *Merchant and Zemindar.* 18, Canal Street, Entally, Calcutta.

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6-8-28	R	**Ghuznavi,** ISKANDER S. K., *Zemindar and Member, Advisory Board of Industries, Government of Bengal.* 30, Theatre Road, Calcutta, (*and*) Dilduar, Mymensingh.
1-2-26	R	**Ghuznavi,** THE HON'BLE ALHADJ SIR ABDELKERIM ABU AHMED KHAN, KT., M.L.C., *Zemindar of Dilduar.* 30, Theatre Road, Calcutta, (*and*) North House, Dilduar, Mymensingh.
1-4-29	A	**Ginwala,** SIR PADAMJI, *President, Indian Tariff Board.* 1, Council House Street, Calcutta.
4-3-29	R	**Goil,** D. P., LT.-COL., I.M.S., M.B., F.R.C S.E., *Civil Surgeon.* Principal, Medical College, Calcutta.
5-3-28	R	**Gooptu,** DWIJENDRA NATH, *Medical Practitioner and Landholder.* 5, Middleton Street, Calcutta
7-9-10	N	***Gravely,** FREDERIC HENRY, D.SC., F.A.S.B. Museum House, Egmore, Madras.
5-12-00	L	**Grieve,** JAMES WYNDHAM ALLEYNE. c/o Messrs. Coutts & Co., 440, Strand, London, W.C. 2.
4-2-25	R	**Guha,** B. S., M.A., PH.D. (HARVARD). Indian Museum, Calcutta.
6-12-26	R	**Guha,** SURENDRANATH, RAI BAHADUR, *Judge, High Court.* 18, Ram Mohan Dutt Road, Bhawanipur, Calcutta.
1-3-26	N	**Gupta,** DHIRENDRA NATH, MAJOR, I.M.S., *Behar and Orissa Medical Service.* Assistant Surgeon, Sadar Hospital, Arrah.
7-5-28	R	**Gupta,** J. N., M.B.E., C.I.E., I.C.S., *Late Member, Board of Revenue, Government of Bengal.* 7, Pretoria Street, Calcutta.
5-3-19	N	**Gupta,** SIVAPRASAD. Seva Upavana, Benares City
5-8-15	N	**Gurner,** CYRIL WALTER, I.C.S., *District Magistrate.* Mymensingh.
6-3-01	N	**Habibur** RAHMAN KHAN, *Rais.* Bhikanpur, District Aligarh.
7-8-07	F	***Haines,** HENRY HASELFOOT, C.I.E., F.C.H., F.L.S., F.A.S.B. Glen Ashton, Wimborne, Dorset, England.
6-1-30	R	**Haldar,** SUDHINDRA KUMAR, *Indian Civil Service, Calcutta Club.* 241, Lower Circular Road, Calcutta.
6-1-30	F	**Hamilton,** SIR DANIEL MACKINNON, *Retired Partner, Messrs. Mackinnon Mackenzie & Co.* Balmacara, Rosshire, Scotland.
2-4-24	R	**Haq,** M. MAHFUZ-UL, M.A., *Lecturer, Presidency College.* 13/1, Collin Lane, Calcutta.
2-4-28	N	**Hargopal,** PANDIT, *Government Jagirdar, Landlord.* Turkman Gate, Delhi.
1-5-12	R	**Harley,** ALEXANDER HAMILTON, M.A., I.E.S., *Principal.* Islamia College, Calcutta.
2-5-23	A	**Harnett,** W. L., LT.-COL., I.M.S., M.B., F.R.C.S., *Principal.* Medical College, Calcutta.
1-2-26	R	**Harris,** H. G., *Director, Messrs. Martin & Harris, Ltd.* 8, Waterloo Street, Calcutta.
2-4-28	R	**Harris,** LAWRENCE ERNEST, *Engineer, Manager for India, Messrs. Sulzer Brothers.* 11, Clive Street, Calcutta.
5-3-28	R	**Hawes,** GEORGE LAURENCE, M C., *Underwriter.* 4, Merlin Park, Ballygunge, Calcutta.
4-4-27	N	**Helland,** BERNHARD ALVIN, B.A., *Augsburg College (U.S.A.),* B.D., *Augsburg Seminary (U.S.A.),* M.A., *University of Minnesota (U.S.A.), Missionary-Teacher, under appointment as Principal, Kaerabani Boys' Middle English and Guru Training School.* Kaerabani, via Dumka, Santal Parganas.

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Date of Election.		
5-11-19	N	**Hemraj,** Raj Guru, Pandit. Dhokatol, Nepal.
3-2-30	R	**Henderson,** Alexander Gavin, B.A. (Oxon). Buscot Park, Faringdon, Berks; Flat No. 9, 4, Elysium Row, Calcutta.
3-12-24	R	**Hendry,** C. A. John, F.R.G.S., M.I.S.E., A.M.I.M.E., M.I.E., M.MIN.I., *Consulting Mechanical Engineer, Messrs. Martin & Co.* 12, Mission Row, Calcutta.
6-8-28	R	**Heron,** A. M., D.SC. (Edin.), F.G.S., F.R.G.S., F.R.S.E., *Superintendent, Geological Survey of India.* Indian Museum, Calcutta.
7-6-11	R	***Hidāyat Ḥusain,** Muhammad, Shams al-'Ulama, Khan Bahadur, PH.D., F.A.S.B. 96/2c, Collin Street, Calcutta.
1-2-26	R	**Hingston,** H., Lt.-Col., I.M.S., M.D., *Surgeon to H.E. the Governor of Bengal.* 5, Wellesley Place, Calcutta.
4-6-28	N	**Hobart,** Robert Charles, I.C.S., *Collector.* Bareilly, U.P.
1-4-25	R	**Hobbs,** Henry, *Merchant.* 4, Esplanade East, Calcutta.
7-3-27	N	**Hopkinson,** Arthur John, I.C.S. Kahalla, Nathiagali, N.-W.F.P.
2-11-21	L	***Hora,** Sunder Lal, D.SC., F.Z.S., F.R.S.E., F.A.S.B. Zoological Survey of India, Indian Museum, Calcutta.
2-7-28	R	**Hossain,** Nawab Musharruf, Khan Bahadur, M.L.C. 42-A, Hazra Road, Calcutta.
6-6-23	L	***Howard,** A, C.I.E., M.A., F.A.S.B., *Director, Institute of Plant Industry, and Agricultural Adviser to States in Central India.* Indore, C.I.
4-1-26	R	**Hubert,** Otto, *Chancellor to the German Consulate General.* 2, Store Road, Ballygunge, Calcutta.
2-5-27	F	**Hürlimann,** Martin, Dr. Phil. Sihlberg, Zurich 2, Switzerland.
1-2-26	N	**Husain,** Mohammad Afzal, M.A., M SC., I.A.S., *Entomologist to the Government of the Punjab.* Lyallpur, Punjab.
6-6-23	N	***Hutton,** J. H., C.I.E., I.C.S., M.A., D.SC., F.A.S.B., *Census Commissioner of India.* Chelmsford Club, New Delhi.
7-2-27	N	**Imam,** Abu Mohammad Syed Hassan, *Zemindar.* Hasnain Manzil, Gaya, E.I.R.
1-2-11	L	**Insch,** James. c/o Messrs. Duncan Bros. & Co., 101, Clive Street, Calcutta.
5-11-28	R	**Ishaque,** Mohammad, M.A., B.SC., M.R.A.S., *Lecturer, Calcutta University.* 6, Hospital Street, P.O. Dhurrumtollah, Calcutta.
4-3-29	N	**Iyer,** Mandakolatore Subrahmanya. 879, Nagamaram Lane, East Gate, Fort, Tanjore.
5-12-23	R	**Jackson,** P. S. 14, Old Court House Street, Calcutta.
2-12-29	R	**Jacob,** Joseph, *Export Department, Messrs. Andrew Yule & Co., 8, Clive Row.* 19, Loudon Street, Calcutta.
6-6-27	L	**Jain,** Baldeodas, *Merchant and Banker.* 21, Armenian Street, Calcutta.
2-2-21	R	**Jain,** Chhote Lal, M.R.A.S. 25, Central Avenue North, Calcutta.
6-1-30	N	**Jain,** Nirmal Kumar. Devashrama, Arrah.
6-8-28	N	**Jaitly,** P. L., *Electrical Engineer, Merchant.* 15, Canning Road, Allahabad.
1-11-26	N	**Jameson,** Thomas Blandford, Major, M.C., M.A. (Cantab.), I.C.S., *District and Sessions Judge.* Midnapore.
7-5-28	R	**Jardine,** Alexander, D.SC., M.INST.C.E., M.I.E. (Ind.), *Director, Messrs. Jessop & Co, Ld.* 93, Clive Street, Calcutta.

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4-11-29	R	**Jarvis,** ROBERT Y., *Consul of the United States of America.* 9, Esplanade Mansions, Calcutta.
6-5-25	R	**Jatia,** SIR ONKAR MULL, KT., O.B.E., *Merchant.* 2, Rupchand Roy Street, Calcutta.
4-2-29	R	**Jenkins,** WALTER ALLEN, D.SC. (SHEFFIELD), I.E.S., M.L.C. United Service Club, Calcutta.
7-2-23	A	**Jinavijayaji,** MUNI, *Principal, Gujerat Puratattva Mandir.* Ellisbridge, Ahmedabad.
5-4-26	A	**Jones,** THORNTON, *Solicitor.* c/o Messrs. Morgan & Co., 1, Hastings Street, Calcutta.
2-4-24	R	**Judah,** N. J., M.B., CH.B., F.R.C.S. 43, Chowringhee, Calcutta.
1-11-11	L	**Kamaluddin** AHMAD, SHAMS AL-'ULAMA, M.A., I.E.S., *Inspector of Schools, Chittagong Division.* Chittagong.
5-3-24	R	**Kanjilal,** M. N., M.A. (CAL.), LL.B. (CANTAB.), *Barrister-at-Law.* 17, Loudon Street, Calcutta.
6-5-29	N	**Kapur,** DIWAN RAM CHANDRA, *Millowner and Banker.* Diwan Balmokund Kapur Lane, Benares City.
5-11-24	R	**Kapur,** SHAMLAL, *Import and Banking.* 84, Khengrapatty, Calcutta.
1-2-26	N	**Kashyap,** SHIV RAM, RAI BAHADUR, B.A., M.SC., I.E.S., *Professor of Botany.* Government College, Lahore.
10-6-12	R	**Kazim Shirazi,** AGA MOHAMMED. 16A, Ahiripukur 1st Lane, Ballygunge, Calcutta.
5-11-28	R	**Keable,** REV. GEOFFREY, M.A., *Lecturer, Bishop's College.* 224, Lower Circular Road, Calcutta.
4-5-10	L	***Kemp,** STANLEY W., B.A., D.SC., F.A.S.B. "Discovery Expedition," 52, Queen Anne Chambers, Dean Farrar Street, London, S.W. 1.
2-5-30	N	**Kenny,** DICK EDWARD COURTENAY, MAJOR, I.A., *Deputy Commissioner, Andamans.* Port Blair, Andamans.
6-2-28	F	**Kewal,** GANDA SINGH, PH. B.SC., I.O.G.E., F.R.G.S. (LONDON), F.T.S., F.I.A.SC. (LONDON). Post Box No. 1, Abadan (Persian Gulf).
1-2-26	R	**Khaitan,** D. P., M.L.C., *Attorney-at-Law; Solicitor and Merchant.* 137, Canning Street, Calcutta.
1-2-26	R	**Khambata,** R. B., M.R.C.S., L.R.C.P., D.P.H., *Director of Public Health Laboratory and Professor of Laboratory Practice, School of Tropical Medicine and Hygiene.* 2-B, Camac Street, Calcutta.
3-2-15	N	**Khan,** HAFIZ AHMED ALI, *Controller of Household and Officer-in-charge, State-Library.* Rampur State, U.P.
2-12-29	N	**Khan,** MATIUR RAHMAN, *Landholder and Service Holder.* P.O. Lalmohan, Dt. Bakerganj.
3-12-24	R	**Khan,** REZAUR RAHMAN, M.A., B.L., *Late Deputy Sheriff, Calcutta.* 28, Convent Road, Entally, Calcutta.
6-5-25	R	**Khanna,** VINAYEK LAL, M.R.A.S., *Merchant.* 137D, Balaram Dey Street, Beadon St. P.O., Calcutta.
2-8-26	R	**Khettry,** BENIMADHO, *Proprietor, Messrs. Gouri Shanker Khettry, Landholders, Bankers & Merchants.* 15, Paggiyapatti, Barabazar, Calcutta.
2-11-25	A	**Kimura,** R. (Ko-Shi), *Principal, College Department of Rissho University.* Osaki Machi, Tokyo, Japan.
7-7-20	R	***Knowles,** ROBERT, M.R.C.S., L.R.C.P., B.A. (CANTAB.), F.A.S.B., LT.-COL., I.M.S. 63, Park Street, Calcutta.
6-5-25	A	**Koester,** HANS, *Vice-Consul for Germany.* 17/1, Store Road, Ballygunge, Calcutta.

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6-5-25	R	**Kolah**, K. S., *Merchant.* 8, Dhurrumtollah Street, Calcutta.
5-3-23	N	**Korke**, Vishnu Tatyaji, Captain, F.R.C.P. (Edin.). Central Research Institute, Kasauli.
3-2-30	R	**Korni**, Michael Alexandrowitz, (Dr.), *Architect and Engineer, Messrs. Bird & Co.* 53, Chowringhee Road, Calcutta.
1-3-26	R	**Kramrisch**, Stella (Miss), ph.d., *Lecturer in Ancient Indian History (Fine Arts), Calcutta University.* 57, Ballygunge Circular Road, Calcutta.
2-4-28	R	**Kumar**, Kumar Krishna, m.a., b.l., *Zemindar and Banker.* 31 & 31-1, Burtolla Street, Calcutta.
4-11-29	N	**Kurup**, Pokiarath Chencheri Krishna, l.m.p., *Licentiate of the College of Physicians and Surgeons of Bombay, Medical Officer.* Taliparamba P.O., North Malabar (M.P.).
7-3-23	R	**Labey**, George Thomas, m.c., *Bengal Pilot Service.* United Service Club, Calcutta.
1-4-25	N	**Laden La**, Sonam Wangfel, Sardar Bahadur, o.b.e., f.r.g.s., *Hony. A.D.C. to H.E. the Governor of Bengal, Chief of Police, Lhassa, Tibet.* "Yangang Villa", Darjeeling.
3-6-25	N	**Lal**, Budh Behari, Rai Saheb, b.a., ph.d., *Head Master.* 48B, New Mandi, Muzzaffarnagar.
6-3-89	L	***La Touche**, Thomas Henry Digges, m.a., f.g.s., f.a.s.b. 230, Hills Road, Cambridge, England.
5-8-14	R	**Law**, Bimala Charan, m.a., b.l., ph.d., f.r.hist.s. 43, Kailas Bose Street, Calcutta.
1-2-11	R	**Law**, Narendra Nath, m.a., b.l., p.r.s., ph.d. 96, Amherst Street, Calcutta.
1-7-14	R	**Law**, Satya Churn, m.a., b.l., ph.d., f.z.s., m.b.o.u. 50, Kailas Bose Street, Calcutta.
7-6-26	R	**Lemmon**, Richard Dennis, *Merchant.* 8, Waterloo Street, Calcutta.
3-5-11	R	**Lomax**, C. E., m.a. La Martinière, Calcutta.
4-3-29	R	**Lunan**, A. G., *Partner, Messrs. Bathgate & Co.* 19, Old Court House Street, Calcutta.
5-7-26	N	**Lyne**, Howard William, i.c.s. Khulna, E.B.R.
2-8-05	L	***McCay**, David, lt.-col., i.m.s., m.d., b.ch., b.a.o., m.r.c.p., f.a.s.b. c/o The Standard Bank of S. Africa, Cradock, Cape Province, S. Africa.
5-11-24	R	**MacGregor**, A. D., m.b.c., v.s., i.v.s., *Principal.* Bengal Veterinary College, Belgachia, Calcutta.
1-3-26	R	**McKay**, John Wallace, *Delegate, Chilean Nitrate Committee (Indian Delegation).* 7, Hare Street, Calcutta.
3-11-30	N	**Mackenzie**, Arthur Henderson, c.i.e., m.a., b.sc., a.r.c.s., i.e.s., *Director of Public Instruction, U.P., Officiating Educational Commissioner with the Government of India.* Simla.
11-1-93	L	***Maclagan**, Sir Edward Douglas, k.c.s.i., k.c.i.e., f.a.s.b. 188, West Hill, Putney, London, S.W. 15.
7-1-29	R	**MacLean**, Evan Victor, *Traffic Officer, E. I. Ry.* 1, Colvin Court, Howrah.
6-1-30	R	**McNair**, George Burgh, *Solicitor, Messrs. Morgan & Co.* 5, Harington Street, Calcutta.
5-3-24	R	**McPherson**, James. c/o Messrs. Begg Dunlop & Co., Ltd., 2, Hare Street, Calcutta.
7-6-16	N	**Mahajan**, Surya Prasad. Murarpur, Gaya.
3-3-20	R	**Mahalanobis**, P. C., m.a., b.sc., i.e.s., *Professor, Presidency College.* 210, Cornwallis Street, Calcutta.

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5-12-06	R	**Mahalanobis,** SUBODH CHANDRA, B.SC. (EDIN.), F.R.S.E., I.E.S., *Late Professor, Presidency College.* P-45, New Park Street, Calcutta.
1-3-11	F	**Mahtab,** SIR BIJAY CHAND, K.C.S.I., I.O.M., MAHARAJADHIRAJA BAHADUR OF BURDWAN. 6, Alipur Lane, Calcutta.
3-2-30	N	**Mahtab,** UDAY CHAND, *Maharaj Kumar of Burdwan.* The Palace, Burdwan.
6-2-24	R	**Mahindra,** K. C., B.A. (CANTAB.). Messrs. Martin & Co., 12, Mission Row, Calcutta.
7-7-30	R	**Mahudavala,** JEHANGIR J., B.COM. (BIRMINGHAM), *Insurance Representative.* 2-B, Camac Street, Calcutta.
7-8-18	R	**Maitra,** JATINDRA NATH, *Physician and Surgeon.* 68/A, Beadon Street, Calcutta.
4-7-27	R	**Maitra,** JOGENDRA NATH, M.SC., M.B., *Medical Practitioner.* 58-A, Colootollah Street, Calcutta.
2-8-26	N	**Majumdar,** DHIRENDRA NATH, M.A., *Lecturer in Anthropology.* University of Lucknow, Lucknow.
2-6-20	N	**Majumdar,** NANI GOPAL, M.A. Archæological Department, Gorton Castle, Simla.
2-2-16	R	**Majumdar,** NARENDRA KUMAR, M.A., *Professor, Calcutta University.* 18, Jhamapukur Lane, Mechuabazar, Calcutta.
4-6-13	N	**Majumdar,** RAMESH CHANDRA, M.A., PH.D., *Professor.* Dacca University, Ramna, Dacca.
5-5-30	N	**Mallam,** G. L., CAPTAIN, *Census Superintendent.* Peshawar, N.-W.F.P.
6-2-28	R	**Mallik,** S. N., C.I.E., M.A., B.L., *Formerly Member, India Council, India Office, London.* 2, Chandranath Chatterji Street, Calcutta.
7-5-28	R	**Mallik,** THE HON'BLE MR. JUSTICE SATYENDRA CHANDRA, M.A., I.C.S., *Judge, High Court.* 7-3, Burdwan Road, Alipur, Calcutta.
4-11-29	R	**Mallya,** BANTWAL GANAPATHY, I.M.S., F.R.C.S.E., 10-4, Elgin Road, Calcutta.
6-2-18	L	***Manen,** JOHAN VAN, C.I.E., F.A.S.B. 6, Temple Chambers, 6, Old Post Office Street, Calcutta.
5-6-01	F	**Mann,** HAROLD HART, D.SC., M.SC., F.I.C., F.L.S., Woburn Experimental Station, Aspley Guise, Bedfordshire, England.
6-1-30	N	**Martin,** M. F. C., CAPT., R.E. Office of C.R.E., Waziristan District, Dera Ismail Khan.
5-3-24	R	**Martin,** T. LESLIE, M.A. (CANTAB.). 12, Mission Row, Calcutta.
4-6-19	N	**Matthai,** GEORGE, M.A., SC.D. (CANTAB.), F.R.S.E., F.L.S., F.Z.S., I.E.S., *Professor of Zoology.* Government College, Lahore.
5-5-30	R	**Matthias,** OWEN GARDINER, *Managing Director, Messrs. Smith Stanistreet & Co., Ld.* Stanistreet House, 18, Convent Road, Entally, Calcutta.
2-12-29	N	**Maynard,** THE REV. BERTRAM MARTIN (*King's College, London*), *Chaplain.* Cawnpore, U.P.
5-12-23	N	**Meggitt,** F. J., B.SC., PH.D., F.Z.S., I.E.S., *Professor of Biology.* University College, Rangoon.
2-1-28	N	**Mehta,** M. H., *Managing Director, M.T. Ltd.* 15, Chowringhee Place, Calcutta
5-3-28	N	**Melhuish,** ROBERT AVELINE, COMMANDER, R.I.M., *Surveyor-in-Charge, Marine Survey of India.* c/o R.I.M. Dockyard, Bombay.

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2-1-28	N	**Mello,** FROILANO de, COLONEL, *Director-General of Medical Services in Portuguese India, Professor of Parasitology.* Nova Gôa.
4-2-25	N	**Menon,** K. RAMUNNI, M.A., *Professor of Zoology.* Presidency College, Madras.
1-2-26	F	**Meston,** LORD, K.C.S.I., LL.D. Hurst, Cookenham Dene, Berkshire, England.
5-11-84	L	***Middlemiss,** CHARLES STEWART, C.I.E., F.R.S., B.A., F.G.S., F.A.S.B. Aviemore, Crowborough, Sussex, England.
1-2-26	N	***Mills,** JAMES PHILIP, I.C.S., M.A. (OXON), J.P., F.A.S.B., *Deputy Commissioner, Kohima.* Naga Hills, Assam.
5-6-12	N	**Misra,** CHAMPARAM, B.A., *Dy. Director of Industries.* Cawnpore, U.P.
2-4-28	R	**Mitra,** DEBENDRA NATH, B.SC. (LOND.), LL.B., *Barrister-at-Law.* 51/2, Ramkanto Bose Street, Calcutta.
2-4-24	R	**Mitra,** J. C., M.A., B.L., *Retired Accountant-General, Bengal.* 1, Abinash Mitter Lane, Calcutta.
4-3-29	R	**Mitra,** JAMINI MOHAN, RAI BAHADUR, M.A., *Registrar, Co-operative Societies, Bengal.* 24, Ray Street, Bhawanipore, Calcutta.
2-4-28	N	**Mitra,** JOGENDRA NATH, L.M.S., *Civil Surgeon.* Comilla.
6-6-06	R	**Mitra,** KUMAR MANMATHA NATH. 34, Shampukur Street, Calcutta.
4-11-29	R	**Mitra,** MATHURA NATH, B.A., *Solicitor.* 12-1, Old Post Office Street, Calcutta.
1-7-29	N	**Mitra,** S. L., M.B., D.P.H., MAJOR, I.M.S., *Officiating Director of Public Health, Government of Assam.* Shillong.
6-8-28	R	**Mitra,** SUBODH, M.D. (BERLIN), M.B. (CAL.), F.R.C.S. (EDIN.). 148, Russa Road, Bhawanipore, Calcutta.
5-3-24	N	**Mitter,** THE HON'BLE SIR B. L., KT., M.A., B.L., *Barrister-at-Law, Law Member, Viceroy's Council.* New Delhi.
5-3-24	R	**Mitter,** DWARKANATH, M.A., D.L., *Judge, High Court.* 12, Theatre Road, Calcutta.
4-3-29	R	**Mitter,** HIRANYA KUMAR, *Landholder.* 1, Jhamapukur Lane, Amherst Street P.O., Calcutta.
5-4-26	N	**Mitter,** KHAGENDRA NATH, M.A., *Professor, Presidency College.* 10, Dover Lane, Ballygunge, Calcutta.
5-4-26	R	**Mitter,** KUMAR KRISHNA, *Merchant and Landlord.* 14, Ahiritolla Street, Calcutta.
5-3-24	R	**Mitter,** THE HON'BLE SIR PROVASH CHANDRA, KT., C.I.E., M.L.C. 34/1, Elgin Road, Calcutta.
4-3-25	R	**Mitter,** PROFULLA CHANDRA, M.A. (CAL.), PH.D. (BERLIN), *Sir Rash Behary Ghosh Professor of Chemistry, Calcutta University.* 22, Garpar Road, Calcutta.
1-11-26	R	**Modi,** JAL R. K., B.A. 4, Camac Street, Calcutta.
3-1-27	N	**Mohammed,** GHULAM, M.A., LL.B., *Indian Audit and Account Service.* Officer on Special Duty with the Railway Board, Delhi.
1-4-25	A	**Mohomed,** ISMAIL ABDULLAH, *Merchant.* 21, Amratolla Lane, Calcutta.
5-7-26	N	**Moin** YAR JUNG BAHADUR, NAWAB. "Musaud Manzil," Lallagooda, Hyderabad, Deccan.
7-5-28	N	**Moledina,** MOHAMED HASHIMI, *Landlord and Merchant.* 30, Main Street, Camp Poona.
2-5-23	A	**Möller,** H. P., *Merchant.* 18, Ballygunge Circular Road, Calcutta.
6-8-24	N	**Moloney,** WILLIAM J., *General Manager of Reuter's for the East.* c/o 26/7, Dalhousie Square, Calcutta.

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2-4-28	R	**Mookerjea,** BHABADEB, *Merchant.* 48, Barrackpore Trunk Road, P.O. Baranagore.
1-3-26	R	**Mookerjee,** ADITYA NATH, M.A., PH.D., *Late Principal, Sanskrit College.* 10/B, Mohun Lal Street, Shambazar, Calcutta.
5-11-24	R	**Mookerjee,** B. N., B.A. (CANTAB.), *Engineer.* 12, Mission Row, Calcutta.
3-12-24	R	**Mookerjee,** J. N., *Civil Engineer.* 12, Mission Row, Calcutta.
7-5-28	R	**Mookerjee,** KUMUD BANDHOB, *Merchant and Zemindar.* Champdany, Baidyabati.
1-3-26	R	**Mookerjee,** SATISH CHANDRA, *Barrister-at-Law.* 7, Ballygunge Circular Road, Calcutta.
3-5-98	L	***Mookerjee,** SIR RAJENDRA NATH, K.C.I.E., K.C.V.O., HON. F.A.S.B. 7, Harington Street, Calcutta.
2-7-24	R	**Mookerjee,** SYAMA PRASAD, M.A., B.L., *Vakil, High Court, Fellow of the University of Calcutta.* 77, Russa Road North, Calcutta.
29-9-99	R	**Mukerjee,** JATINDRA NATH, B.A., *Solicitor.* 4, Hastings Street, Calcutta.
2-2-21	N	**Mukerjee,** SUBODH CHANDRA, SHASTRI, M.A., Docteur-es-Lettres (Paris), Office of the Chief Auditor, N.W.R. Workshop Audit Branch, Moghalpura, Lahore.
5-12-27	R	**Mukerjee,** SUSIL KUMAR, F.R.C.S. (EDIN.), D.O. (OXON), D.O.M.S. (LOND.), *Ophthalmic Surgeon, Carmichael Medical College Hospitals.* 13, Kyd Street, Calcutta.
6-2-28	R	**Mukerji,** MANMATHA NATH, M.A., B.L., *Judge, High Court.* 8/1, Harsi Street, Calcutta.
5-3-24	R	**Mukerji,** S., M.A., B.L., *Vakil and Zemindar.* 7, Old Ballygunge Road, Calcutta.
3-3-30	R	**Mukharji,** ISAN CHANDRA, *Rai Bahadur, Tazimi Sardar and Retired Member of Jaipur Council, Jaipur, Rajputana.* 126-2, Hazra Road, Kalighat, Calcutta.
7-11-27	N	**Mukherjee,** DEVAPROSANNA, M.A., B.L., *Zemindar.* Burdwan.
7-2-27	R	**Mukherjee,** HARENDRA NATH, B.SC., M.B. (CAL.), D.I.C. (LOND.), *Medical Practitioner.* Biochemical Department, Carmichael Medical College, Belgachia, Calcutta.
2-8-26	R	**Mukherjee,** JNANENDRA NATH, D.SC. (LONDON), F.C.S. (LONDON), *Fellow of the Indian Chemical Society; Guruprasad Professor of Chemistry, University of Calcutta.* 92, Upper Circular Road, Calcutta.
5-3-24	R	**Mukherjee,** NARENDRA NATH, B.A. (CAL.), *Publisher.* 31, Central Avenue, Calcutta.
5-2-08	R	***Mukhopadhyaya,** GIRINDRA NATH, BHISAGACHARYA, B.A., M.D., F.A.S.B. 156, Haris Mukerjee Road (North), Bhawanipur, Calcutta.
5-7-26	R	**Mukhopadhyaya,** PRABHAT KUMAR, M.A., *Research Assistant, Calcutta University.* 27, Govinda Ghosal Lane, Bhawanipur, Calcutta.
2-2-21	R	**Mukhopadhyaya,** THE HON'BLE RAMAPRASAD, M.A., B.L. 77, Russa Road North, Bhawanipore, Calcutta.
2-4-28	R	**Mullick,** KARTICK CHURN, KUMAR, *Director, Raja D. N. Mullick & Sons, Ltd* Colootola Rajbati, Chittaranjan Avenue, Calcutta.
4-3-29	R	**Mullick,** PRAMATHA NATH, RAI BAHADUR, *Zemindar and Landholder.* 129, Cornwallis Street, Calcutta.
7-5-28	N	**Murray,** EUGENE FLORIAN OLIPHANT, A.I.M.M., *Mining Geologist and Engineer.* Tatanagar, B.N.Ry.

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Date of Election.		
4-1-26	N	**Murray,** HOWARD, C.I.E., LT.-COL., INDIAN ARMY, *Deputy Financial Adviser.* Flashman's Hotel, Rawalpindi.
3-6-25	N	**Musa,** MUHAMMAD, MOULVI, KHAN BAHADUR, M.A., *Principal, Chittagong Madrasah.* Madrasah Hill, Chittagong.
1-6-21	N	**Muzammil-Ullah Khan,** MOHD., HON'BLE NAWAB, KHAN BAHADUR, O.B.E., *Rais.* Bhikanpur, Dist. Aligarh, U.P.
7-3-06	N	**Nahar,** PURAN CHAND, RAI BAHADUR, *Solicitor.* c/o 48, Indian Mirror Street, Calcutta.
5-12-27	L	**Namgyal,** H.H. MAHARAJA SIR TASHI, K.C.I.E., *Maharaja of Sikkim.* Gangtok, Sikkim.
6-6-27	N	**Nandi,** MAHARAJA SRIS CHANDRA, M.A., M.L.C., *Zemindar.* Kasimbazar Rajbari, Kasimbazar, Murshidabad.
4-2-29	N	**Narain,** HIRDE, M.A., B.T., *Professor of History, Morris College.* Nagpur, C.P.
4-6-28	N	**Narasimham,** YECHURI, M.A., *Dewan, Vizianagram Samsthanam.* Vizianagram.
7-12-26	R	**Narayanaswami,** V., M.A. Royal Botanical Garden, Sibpur, Howrah.
5-3-28	R	**Neogi,** PANCHANAN, M.A., PH.D., I.E.S., *Professor of Chemistry, Presidency College.* 21, Kundu Lane, Belgachia, Calcutta.
3-11-30	R	**Newman,** CARL DAMIEN, M.B.B.S., D.T.M. & H., *District Medical Officer, E.B.Ry.* 1/1, Old Ballygunge Road, Calcutta.
3-12-24	N	**Newman,** CHAS. F., F.R.G.S., M.C.P. Kutcha Bungalow, Bhopal, C.I.
6-8-24	R	**Nyss,** WM. B. S., *Superintendent, Excise and Salt.* 175B, Lower Circular Road, Calcutta.
2-8-26	N	**Oak,** MADHAVA RAMCHANDRA, M.A., *Professor of Philosophy and English Literature, Maharaja's College.* Jaipur, Rajputana.
7-4-15	F	**Ohtani,** COUNT KOZUI. San-ya-so, Edomachi, Fushimi, Kyoto, Japan.
5-11-28	R	**Olpadvala,** E. S. 1, Corporation Street, Calcutta.
2-11-25	R	**Ormond,** ERNEST CHARLES, *Barrister-at-Law.* Bar Library, High Court, Calcutta.
6-6-23	N	**Ottens,** NICHOLAS, B.SC. 15, Clive Row, Calcutta.
6-1-30	R	**Oven,** H. G. VON, DR., *Consul-General for the Netherlands at Calcutta.* 7, Alipur Park Lane, Calcutta.
2-6-30	R	**Oyevaar,** J. J., *Vice-Consul for the Netherlands.* c/o The Java Bengal Line, E-1, Clive Buildings, Clive Street (Post Box No. 71), Calcutta.
5-12-23	N	**Pande,** SHIVA BANDHAN, *Retired Tahsildar and Zemindar.* Ramaipatti, Mirzapur, U.P.
5-4-26	N	**Parker,** RICHARD HENRY, I.C.S., *late Scholar of St. John's College, Oxford; Officiating Under Secretary to the Resident at Hyderabad.* Hyderabad, Deccan.
4-11-29	A	**Parry,** NEVILL EDWARD, I.C.S., *Deputy Commissioner, Garo Hills, Tura.* Garo Hills, Assam.
5-11-19	A	***Pascoe,** SIR EDWIN HALL, KT., M.A., SC.D. (CANTAB.), D.SC. (LOND.), F.G.S., F.A.S.B., *Director, Geological Survey of India.* Indian Museum, Calcutta.
6-5-29	N	**Pawsey,** C. R., *Indian Civil Service.* Mokokchung, Naga Hills, Assam.

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5-12-27	N.	**Peddie**, JAMES, *Indian Civil Service, Magistrate and Collector.* Midnapore.
6-6-88	L	**Pennell**, AUBRAY PERCIVAL, B.A., *Barrister-at-Law.* Lamb's Building, Temple, London, E.C. 4.
1-4-25	R	**Perier**, FERDINAND, S.J., *The Most Reverend Archbishop of Calcutta.* 32, Park Street, Calcutta.
7-4-30	N	**Pessein**, REV. J. F., *Catholic Missionary, Superior of the Catholic Missionary Sanatorium*, Wellington, Nilgiris.
3-2-30	N	**Pettigrew**, THE REV. WILLIAM, *Missionary.* American Baptist Foreign Mission Society, P.O. Kangpokpi, Manipur, Assam.
1-6-04	A	***Pilgrim**, GUY E., D.SC., F.G.S., F.A.S.B. Geological Survey of India, Indian Museum, Calcutta.
7-1-29	R	**Pillai**, G. P., *Entomologist, The Lister Antiseptics and Dressing Co. (1928), Ld.* 14, Hare Street, Calcutta.
5-3-28	A	**Plessen**, BARON LEOPOLD, *Acting Consul-General for Germany.* 2, Store Road, Ballygunge, Calcutta.
1-3-25	R	**Poddar**, HANUMAN PRASAD, *Banker and Commission Agent.* 10A, Central Avenue (South), Calcutta.
4-8-30	R	**Popper**, STEPHEN W., *Merchant.* c/o Messrs Havero Trading Co., Ltd., Commercial House, 15, Clive Street, Calcutta.
3-4-18	L	***Prashad**, BAINI, D.SC., F.Z.S., F.R.S.E., F.A.S.B. Zoological Survey of India, Indian Museum, Calcutta.
3-8-25	R	**Pruthi**, HEM SINGH, M.SC. (PUNJAB), PH.D. (LONDON), *Assistant Superintendent, Zoological Survey of India.* Indian Museum, Calcutta.
1-11-26	N	**Pugh**, LEWIS PUGH EVANS, B.A. (OXON), *Barrister-at-Law.* Patna High Court, Patna.
2-1-28	N	**Puri**, I. M., PH.D. (CANTAB.), M.SC. (PUNJAB). Central Research Institute, Kasauli, Punjab.
3-12-24	R	**Pushong**, E. S., M.D., L.S.A., *Medical Practitioner.* 1, Wood Street, Calcutta.
3-11-30	R	**Quirke**, JOHN PATRICK FRANCIS, *Stock-broker, Messrs. Place, Siddons & Gough.* Calcutta Club, 241, Lower Circular Road, Calcutta.
5-11-28	R	**Rahman**, NAWABZADA A. S. M. LATIFUR, M.A (CANTAB.), *Barrister-at-Law, Judge, Presidency Court of Small Causes.* 10, Turner Street, Calcutta.
3-11-30	R	**Rahman**, SHAH KALIMUR, M.A., *Lecturer in Arabic and Persian, Calcutta University.* 8, Golam Sovan Lane, Calcutta.
7-4-80	N	**Rai**, VEPIN CHANDRA. Giridih, Chota Nagpur.
6-2-28	N	**Rai**, LAKSHMI NARAIN, L.M.S. (CALCUTTA), *Civil Assistant Surgeon.* Benares.
1-2-22	R	***Raman**, SIR CHANDRASEKHARA VENKATA, KT., M.A., D.SC., F.R.S., F.A.S.B. 210, Bowbazar Street, Calcutta.
1-11-26	N	**Ramanujaswami**, P. V., M.A., *Vice-Principal.* Maharaja's Sanskrit College, Vizianagaram.
7-3-27	R	**Rankin**, THE HON'BLE SIR GEORGE, KT., *Chief Justice of Bengal.* 9, Camac Street, Calcutta.
3-12-26	N	**Rao**, A. SUBBA, B.A., D.SC., F.R.M.S., *Professor of Physiology and Embryology.* Medical College, Bangalore.
3-12-24	R	**Rao**, H. SRINIVASA, M.A., D.SC., *Assistant Superintendent, Zoological Survey of India.* Indian Museum, Calcutta.
6-5-25	R	**Rao**, M. VINAYAK, RAO BAHADUR, B.A., F.G.S., *Assistant Superintendent, Geological Survey of India.* Indian Museum, Calcutta.

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1-2-26	N	**Rao**, Y. Ramachandra, Rao Sahib, M.A., F.E.S., *Government Entomologist, Agricultural Research Institute.* Lawley Road, Coimbatore.
4-8-30	N	**Raparia**, Tara Chand, B.A., *Business Manager.* c/o Messrs. Bansidhar Sumerchand & Co., Belangunj, Agra, U.P.
3-4-18	N	**Ratnakar**, Jagannath Das, B.A., Kavisudhakar. Shivalaghat, Benares City.
2-7-24	N	**Ray**, Abinash Chandra, B.A. R.M.H.E. School, P.O. Deoghar, E.I.R.
2-7-24	R	**Ray**, Bhabendra Chandra, *Zemindar.* 6, Short Street, Calcutta.
7-9-10	R	**Ray**, Kumar Sarat Kumar, M.A., M.R.A.S. 52, Police Hospital Road, Entally, Calcutta.
5-1-21	N	**Ray**, Jagadisnath, Maharaja, *Maharaja of Dinajpore.* Dinajpore.
3-2-30	R	**Ray**, Jatindra Mohan, B.A., C.E., M.I.E., 49, Lansdowne Road, Calcutta.
5-3-90	R	***Ray**, Sir Profulla Chandra, Kt., C.I.E., D.Sc., F.A.S.B. University College of Science, 92, Upper Circular Road, Calcutta.
3-3-20	R	**Raye**, Narendra Nath, M.A., *Principal.* Ripon College, Calcutta.
5-11-28	L	**Reinhart**, Werner, *Merchant.* c/o Messrs. Volkart Bros., Rychenberg, Winterthur, Switzerland.
6-2-28	R	**Reneman**, Nico. 52/1, Ballygunge Circular Road, Calcutta.
3-8-25	N	**Reuben**, David Ezra, I.C.S. Judge's House, Cuttack, B. N. Ry.
2-4-24	F	**Richards**, F. J., I.C.S. 6, Lexham Gardens, London, W. 8.
1 4-29	N	**Rizvi**, Syed Hamid Husain, *Excise Sub-Inspector.* Mohalla Sanechri, Near Musjid of Munshi Sk Ghassu, Saugor, C.P.
3-12-24	L	**Roerich**, George Nicholas, M.A., M.R.A.S., *Orientalist.* 310, Riverside Drive, New York, U.S.A.
2-7-28	L	**Roerich**, Nicholas, *Professor, Honorary President, Master Institute of United Arts, New York, U.S.A., Artist-Painter.* 310, Riverside Drive, New York, U.S.A.
3-12-24	N	**Rogers**, T. E., *Tea Planter.* Nagadhoolie Tea Estate, Mariani, Assam.
7-5-24	A	**Rose**, G. F., *Director, Messrs. Andrew Yule & Co., Ltd.* 8, Clive Row, Calcutta.
4-12-01	F	***Ross**, Sir Edward Denison, Kt., C.I.E., Ph.D., F.A.S.B., *Director, School of Oriental Studies.* Finsbury Circus, London, E.C. 2.
6-12-26	R	**Roy**, Hon'ble Mr. Justice A. K., *Barrister-at-Law, Judge, High Court.* 3, Upper Wood Street, P.O. Theatre Road, Calcutta.
7-9-21	R	**Roy**, Hem Chandra, M.A., Ph.D. 42A, Bosepara Lane, Baghbazar, Calcutta.
1-12-30	N	**Roy**, Kumar Kamalranjan, B.A., *Zemindar.* Kashimbazar Post, Dt. Murshidabad.
2-4-28	N	**Roy**, Suhrid Kumar, B.Sc., Ph.D., F.G.S., *Professor of Geology, Indian School of Mines.* Dhanbad.
7-7-20	R	**Roy-Chaudhuri**, Hem Chandra, M.A., Ph.D. 28, Gopal Bose Lane, Jhamapukur, Calcutta.
6-8-24	R	**Roy-Chowdhury**, Brajendra Kishore, *Zemindar.* 53, Sukea Street, Calcutta.
1-2-26	N	**Ruthnaswamy**, M., M.A., *Barrister-at-Law, Principal, Law College.* Esplanade, Madras.

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7-5-28	N	***Saha**, MEGH NAD, D.SC., F.R.S., F.A.S.B., *Professor of Physics, University of Allahabad.* Katra, Allahabad.
3-11-30	N	**Sahaya**, SHYAMNANDAN, B.A., *Businessman, Agent, New India Assurance Co., Ltd., Bombay, and Agent, The National Banking and Loan Co., Ltd., Calcutta.* Bank Road, Patna.
5-11-24	N	***Sahni**, B., M.A., SC.D. (CANTAB.), D.SC., F.G.S., F.A.S.B., *Professor of Botany.* The University, Lucknow.
2-11-25	R	**Sanaullah**, MUHAMMAD, M.A., *Professor of Arabic and Persian, Presidency College.* 16, Hyat Khan Lane, Sealdah, Calcutta.
6-5-29	R	**Sanyal**, SRISH CHANDRA, *Astronomer.* 25, Rani Branch Road, P.O. Cossipur, Calcutta.
3-12-24	R	**Sarkar**, C. K., C.E., *Engineer and Architect.* 10, Hastings Street, Calcutta.
1-11-22	N	**Sarkar**, SURESH CHANDRA, RAI BAHADUR, M.A., *Retired Dy. Magistrate and Dy. Collector.* Barganda, Giridih.
7-3-27	R	**Sarma**, SIR B. NARASIMHA, K.C.S.I., *President, Railway Rates Advisory Committee.* 24/1, Ballygunge Circular Road, Calcutta.
3-3-09	R	**Sarvadhikary**, SIR DEVAPRASAD, KT., C.I.E., O.B.E., C.B.E., M.A., B.L., F.C.U., LL.D. (ABERDEEN), LL.D. (ST. ANDREWS), SURIRATNA, VIDYARATNAKAR, JNANASINDHU. 20, Suri Lane, Entally, Calcutta.
6-5-29	N	**Sastri**, D. S. BALASUBRAMANIYA, *Bhashachatushtaya Pandita (Passed Nyaya Mimansa Siromoni Class in 1913), Telugu Pandit, Borstal School, Tanjore.* Borstal Teachers' Lines, Tanjore.
7-5-28	N	**Sastri**, HIRANANDA, M.A., M.O.L., D.LITT., *Government Epigraphist for India.* Baikie House, Ootacamund, Nilgiris.
1-4-25	R	**Sen**, BENOY CHANDRA, M.A., *Professor of History, City College.* 7, Bishwakosh Lane, Baghbazar, Calcutta.
2-4-28	R	**Sen**, BENOY KUMAR, M.A., *Professor of History, Presidency College.* 3/1A, Chidam Mudy Lane, Calcutta.
3-12-24	R	**Sen**, H. K., M.A., D.SC. (LONDON), D.I.C., *Professor of Chemistry, University College of Science.* 92, Upper Circular Road, Calcutta.
7-5-02	R	**Sen**, JOGINDRANATH, M.A., VIDYARATNA, VIDYABHUSAN. 32, Prasanna Kumar Tagore Street, Calcutta.
5-12-23	L	**Sen**, LAKSHMAN, H.H. RAJA OF SUKET. Suket State, Punjab.
3-6-29	R	**Sen**, PRABODH CHANDRA, M.A., *Research Assistant, Calcutta University.* 12, Radhanath Mallik Lane, Calcutta.
1-4-29	R	**Sen-Gupta**, NARES CHANDRA, M.A., D.L., *Advocate, High Court.* 128-B, Justice Chandra Madhab Road, Bhawanipore, Calcutta.
5-4-26	R	**Senior-White**, RONALD, F.E.S., F.R.S.T.M. & H., *Malariologist.* B. N. Ry. House, Kidderpore, Calcutta.
1-12-97	R	**Seth**, MESROVB JACOB, M.R.A.S., M.S.A., F.R.S.A., *Examiner in Classical Armenian to the Calcutta University.* 13, Elliott Road, Calcutta.
3-3-30	N	**Seth**, T. N., M.SC., PH.D. (CANTAB.), M.B.S. (ENGLAND), *Lecturer in Bio-chemistry, Department of Physiology.* Medical College, Patna.
1-2-26	N	**Setna**, S. B., M.SC., *Lecturer.* The Royal Institute of Science, Bombay.

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5-7-11	L	***Sewell,** ROBERT BERESFORD SEYMOUR, M.A., SC.D. (CANTAB.), M.R.C.S., L.R.C.P., F.Z.S., F.L.S., F.A.S.B., LT.-COL., I.M.S., *Director, Zoological Survey of India.* Indian Museum, Calcutta.
5-3-28	R	**Shaha,** BRAJABULLAV, M.B., D.T.M., *Medical Practitioner.* 45A, Sovabazar Street, Calcutta.
2-11-25	N	**Sharif,** MOHAMMAD, D.SC., F.R.M.S., F.L.S, *Lecturer in Zoology.* Muslim University, Aligarh.
6-5-29	N	**Sharma,** SRI RAM, M.A., M.R.A.S., M.A.O.S., *Professor of History.* D.A.-V. College, Lahore.
4-2-85	L	***Shāstrī,** HARAPRASĀD, MAHĀMAHOPĀDHYĀYA, C.I.E., M.A., D.LITT., F.A.S.B., HON. MEMBER, R.A.S. 26, Pataldanga Street, Calcutta.
2-4-28	A	**Shaw,** EDWARD BRIAN, M.A. (CAMBRIDGE), I.C.S. Nowgong, Assam.
2-5-23	N	**Shebbeare,** E. O., Conservator of Forests, Darjeeling.
6-1-09	N	**Shirreff,** ALEXANDER GRIERSON, B.A., I.C.S. Sitapur, U.P.
4-1-26	R	**Shortt,** H. E., MAJOR, I.M.S., *Director, Kala-Azar Commission.* Golaghat, Assam.
6-2-28	L	**Shumsher** JUNG BAHADUR RANA, SIR KAISER, K.B.E., SUPRADIPTA MANYAVARA, LIEUT.-GENERAL, *Nepalese Army.* Kaiser Mahal, Kathmandu, Nepal.
5-2-02	N	**Shyam Lal,** LALA, M.A., LL.B. Nawabganj, Cawnpore, U.P.
1-4-25	R	**Sidiq,** SYED MOHAMMAD, *Unani Physician.* 11, Harin Bari 1st Lane, Calcutta.
3-12-24	N	**Siddiqi,** A., M.A. (ALLAHABAD), PH.D. (GÖTTINGEN), *Professor of Arabic and Islamic Studies.* University of Allahabad, Allahabad.
4-11-29	R	**Siddiqi,** MOHAMMAD ZUBAYR, *Sir Asutosh Professor of Islamic Culture, Calcutta University.* 28/1, Jhautolla Road, Park Circus, Calcutta.
5-3-13	L	***Simonsen,** JOHN LIONEL, D.SC., F.I.C., F.A.S.B. 16/36, University College of North Wales, Bangor, North Wales.
6-2-18	N	**Singh,** BADAKAJI MARICHI MAN. 38, Khichapokhari, Kathmandu, Nepal.
4-11-29	R	**Singh,** JAIPAL, M.A., (*Modern Greats*), *St. John's College, Oxford University, Executiue Assistant, Burmah-Shell* Calcutta.
29-8-99	N	**Singh,** SIR PRABHU NARAIN, H.H. THE MAHARAJA BAHADUR, G.C.I.E., G.C.S.I., *Maharaja of Benares.* Ramnagar Fort, Benares.
7-4-09	N	**Singh,** PRITHWIPAL, RAJA, F.R.G.S., F.R.S.A., F.T.S., *Talukdar of Surajpur.* Chandrahas Palace, Hathaunda, Barabanki, Oudh.
7-2-94	N	**Singh,** VISHWA NATH, H.H. THE MAHARAJA BAHADUR. Chhatturpur, Bundelkhund.
5-9-12	N	**Singhi,** BAHADUR SINGH. Azimganj, Murshidabad.
3-4-18	N	**Sinha,** BHUPENDRA NARAYAN, RAJA BAHADUR, B.A. Nashipur Rajbati, Nashipur.
3-2-30	N	**Sinha,** THE HON'BLE SUSHIL KUMAR, B.A. (OXON.), *Indian Civil Service, District and Sessions Judge, Murshidabad.* Berhampore, Bengal.
7-5-28	F	**Sinha,** LORD, OF RAIPUR. Queen Anne Mansions, St. James Park, London.
2-7-13	N	**Sinha,** RUDRA DATTA, M.A., LL.B., M.R.A.S. Nazirabad Road, Lucknow.
6-6-27	N	**Sinha,** SHEONANDAN PRASAD, M.B., *Assistant Surgeon.* Chatra, Dt. Hazaribagh.

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6-2-28	R	**Sinha**, SUHRID CHANDRA, KUMAR, M.SC. 15/1/1, Ramakanto Bose Street, Bagh Bazar, Calcutta.
4-1-26	N	**Sinton**, J. A., O.B.E., MAJOR, I.M.S., V.C., *Officer-in-Charge, Malaria Bureau.* Central Research Institute, Kasauli.
5-7-16	L	**Sircar**, GANAPATI, VIDYARATNA. 69, Beliaghatta Main Road, Calcutta.
5-3-24	R	**Sircar**, N. N., M.A., B.L., *Barrister-at-Law.* 36/1, Elgin Road, Calcutta.
5-3-24	R	**Sircar**, SIR NIL RATAN, KT., M.A., M.D., *Physician.* 7, Short Street, Calcutta.
2-6-20	A	**Skinner**, S. A., *Engineer and Director, Messrs. Jessop & Co., Ltd.* 93, Clive Street, Calcutta.
1-3-26	R	**Snaith**, JOHN FRANK, *Managing Director, Messrs. Hamilton & Co.* 8, Old Court House Street, Calcutta.
2-8-26	R	**Sohoni**, VISHVANATH VISHNU, B.A., B.SC., *Meteorologist* The Observatory, Alipore, Calcutta.
5-8-29	A	**Sommerfeld**, ALFRED, *Merchant.* 5, Ballygunge Park, Calcutta.
4-2-29	R	**Srimani**, JOGGESWAR, L.M.S , *Zemindar and Medical Practitioner.* Chandernagore, E.I.R
7-3-27	R	**Stagg**, M., LT.-COL., R.E., O.B.E., *Master, H.M.'s Mint.* Strand Road, Calcutta.
7-3-23	F	**Stamp**, L. DUDLEY, B.A., D.SC. University of London, London School of Economics, Houghton Street, London, W.C. 2.
6-6-27	R	**Staples**, EDWARD HENRY, *Broker.* 3, Auckland Place, Calcutta.
4-1-26	N	**Stapleton**, GRACE (MISS), M.D., B.S. (LONDON). Government Caste and Gosha Hospital, Triplicane, Madras.
28-9-04	L	***Stapleton**, HENRY ERNEST, M.A., B.SC., I.E.S., F.A.S.B. *Director of Public Instruction, Bengal.* 8, Galstaun Mansions, Calcutta.
7-12-25	A	**Stark**, LEONARDUS, *Banker.* c/o Netherlands India Commercial Bank, Dalhousie Square, Calcutta.
5-11-28	N	**Statham**, R. M., C.I.E., B.A., I.E.S., *Principal, Presidency College.* Madras Club, Madras.
6-5-25	R	**Staub**, MAX, *Consul for Switzerland.* 100, Clive Street, Calcutta.
1-8-23	A	**Stow**, SIR ALEXANDER MONTAGU, K.C.I.E., O.B.E., M.A. (CANTAB.), I.C.S., *Chief Commissioner.* Delhi.
1-11-22	R	**Strickland-Anderson**, (MRS.). 1, Alipur Park, Calcutta.
5-6-07	R	***Suhrawardy**, ABDULLAH AL-MA'MUN, IFTIKHARUL MILLAT, M.A., *Barrister-at-Law*, D.LITT., LL.D., F.A.S.B. 56, Mirzapur Street, Calcutta.
2-6-20	R	**Suhrawardy**, HASSAN, MAJOR, M.D., F.R.C.S., I.T.F.M.C., *Chief Medical Officer, E. B. Ry.* 2, Belvedere Park, Alipur, Calcutta.
4-4-27	R	**Suhrawardy**, SIR Z. R. Z., KT., *Late Judge, High Court.* 61, Ripon Street, Calcutta.
3-3-20	N	**Sundararaj**, BUNGURU, M.A., PH.D., *Director of Fisheries.* Madras.
4-1-26	R	**Sur**, S. N., M.B., D.P.H., D.T.M., *Assistant Director of Public Health.* Writers' Buildings, Calcutta.
7-4-30	N	**Swami**, VIDYA NAND. Jasdan State, Kathiawad.
4-3-29	R	**Tagore**, PRAFULLA NATH, *Zemindar and Landholder.* 1, Darpanarain Tagore Street, Calcutta.

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Date of Election.		
2-7-28	R	**Tagore,** RANENDRA MOHON, *Zemindar.* 6, Alipore Park Road East, Calcutta.
6-4-98	R	**Tagore,** SIR PRADYOT COOMAR, KT., MAHARAJA BAHADUR. "Emerald Bower", 56, Barrackpore Trunk Road, 24-Pergs.
6-7-04	A	**Talbot,** WALTER STANLEY, C.I.E., I.C.S. (RETIRED). Glenhurst Esher, Surrey, England.
1-4-25	R	**Taraporewala,** IRACH J. S., B.A., PH.D., *Barrister-at-Law, Professor of Comparative Philology, University of Calcutta.* 77-9, Dharamtola Street, Calcutta.
7-11-27	R	**Tarkatirtha,** BIMALANANDA, *Kaviraj, Pundithhusan, Byakaranatirtha.* 90/3, Grey Street, Calcutta.
31-8-93	L	**Tate,** GEORGE PASSMAN. 56, Cantonment, Bareilly, U.P.
5-6-78	F	***Temple,** SIR RICHARD CARNAC, BART., C.B., C.I.E., F.B.A., F.S.A., F.A.S.B., *Formerly Lieutenant-Colonel, Indian Army.* c/o Lloyds Bank, Ltd., Cox's and King's Branch, 6, Pall Mall, London, S.W.
2-12-29	R	**Thomas,** H. W., F.C.S., M.P.S., *Senior Partner and Chairman of the Managing Directors, Messrs. Smith Stanistreet & Co.* Stanistreet House, 18, Convent Road, Entally, Calcutta.
4-8-09	N	**Thompson,** SIR JOHN PERRONET, K.C.I.E., C.S.I., M.A., I.C.S., *Chief Secretary, Government of the Punjab.* United, Service Club, Simla.
1-6-04	L	***Tipper,** GEORGE HOWLETT, M.A., F.G.S., M.INST.M.M., F.A.S.B. "The Laurels", Glebe Road, Cambridge, England.
4-3-29	N	**Titus,** REV. MURRAY T., PH.D., D.D., *Missionary of the Methodist Episcopal Church.* Budaun, U.P.
4-3-29	N	**Travers,** WALTER LANCELOT, C.I.E., O B.E., M.L.C., *Tea Planter, Baradighi Tea Estate.* Baradighi P.O., B.D.R., Jalpaiguri.
7-5-28	F	**Tucci,** GUISEPPE, PH.D., *Late Professor of Religions and Philosophy of India and the Far East, University of Rome; Professor of Chinese, University of Naples.* Naples, Italy.
5-7-26	F	**Tyson,** JOHN DAWSON, I.C.S. *Private Secretary to H.E. The Governor of Bengal.* Government House, Calcutta.
6-5-25	R	**Ukil,** AMULYA CHANDRA, M.B. (CAL.), *Professor of Bacteriology, National Medical Institute, and Assistant Director, Clinical Research Association.* 6/1, Kanklia Road, Ballygunge, Calcutta.
6-8-28	R	**Urchs,** OSWALD, M.D c/o Messrs. Havero Trading Co., Ld., 15, Clive Street (Post Box 2122), Calcutta.
7-3-27	R	**Urquhart,** REV. W. S., M.A., D.D., D.LITT., *Principal, Scottish Churches College.* 3 & 4, Cornwallis Square, Calcutta.
4-7-27	A	**Vance,** R.L., M.B., MAJOR, *Indian Medical Service.* Gyantse, Tibet.
6-7-25	N	**Varma,** SOHAN LAL, *Honorary Magistrate, Banking and Zemindari.* Laharpur, Sitapur District.
5-7-05	R	**Vidyabhusana,** AMULYA CHARAN. 28A, Telepara Lane, Calcutta.
6-8-28	R	**Vijver,** RICHARD HUBERTUS VAN DE, *Merchant.* 8, Lee Road, Hastings, Calcutta.
1-2-26	N	**Viswanath,** B., *Fellow, Chemical Society of London; Fellow, Chemical Society of India; Officiating Government Agricultural Chemist.* Lawley Road, Coimbatore.

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Date of Election.		
6-3-01	L	*Vogel, JEAN PHILIPPE, LITT.D., F.A.S.B. The University, Lieden, Holland.
27-9-94	L	Vost, WILLIAM, LT.-COL., I.M.S. Leicester Lodge, 1, Medina Villas, Hove, Sussex, England.
6-5-25	R	Wadia, D. N., M.A., B.SC., F.R.G.S., F.G.S., *Geological Survey of India.* Indian Museum, Calcutta.
5-3-28	N	Waight, HARRY GEORGE, B.A. (OXON. and LOND.), F.R.G.S., I.C.S., *District Judge,* Jalpaiguri
7-3-27	A	Ward, DOROTHY (MRS.). c/o J. Dickinson & Co., Ld., P.O. Box No. 45, Calcutta.
5-3-28	R	Watling, R. G., *Indian Police* (*Railway Police*), *E. I. Ry.* 5, Strand Road, Howrah.
2-1-28	N	Wats, R. C., CAPTAIN, M.D., D.P.H., D.T.M., I.M.S. Mhow, Indore, C.I.
2-5-27	R	Watson, ALFRED HENRY, *Journalist.* c/o The "Statesman," Calcutta.
1-11-26	R	Westcott, Foss, THE MOST REVEREND, D.D. (CANTAB.), HONORARY D.D. (OXON.), *Lord Bishop of Calcutta and Metropolitan of India, Burma and Ceylon.* Bishop's House, 51, Chowringhee, Calcutta.
19-9-06	L	Whitehead, RICHARD BERTRAM, I.C.S. (RETD.). 30, Millington Road, Cambridge, England.
6-5-29	N	Williams, HENRY FRENCH FULFORD, M.A., CLARE COLLEGE (CAMB.), *Chaplain.* Shillong, Assam.
6-2-28	N	Williams, T. TALIESIN, M.A., B.SC., *Principal, Rajshahi College.* Rajshahi.
6-12-26	F	Winfield, WALTER WARREN, B.A., B.D., *Missionary.* c/o Baptist Missionary Society, 19, Furnival Street, London, E.C. 4, England.
7-3-06	L	*Woolner, ALFRED COOPER, C.I.E., M.A., F.A.S.B. 53, Lawrence Road, Lahore.
1-4-08	R	Wordsworth, WILLIAM CHRISTOPHER, M.A., I.E.S. (RETD.). c/o The "Statesman", 6, Chowringhee, Calcutta.
2-1-28	A	Wright, GERTRUDE MARIAM (MISS). *Indian Educational Service, Principal, Bethune College.* 181, Cornwallis Street, Calcutta.
7-3-27	R	Wright, FREDERIC MAITLAND, *Broker.* 2-5, Lansdowne Road, Calcutta.
5-2-19	N	Yazdani, GHULAM, M.A. Archæological Survey, Hyderabad, Deccan.
6-8-28	R	Young, REV. ARTHUR WILLIFER, *Secretary, British and Foreign Bible Society.* 23, Chowringhee, Calcutta.

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ORDINARY MEMBERS.

(*Chronological.*)

1878.			
	June	5.	Temple, Sir R. C.
1880.			
	April	7.	Rai, B. C.
1884.			
	Nov.	5.	Middlemiss, C. S.
1885.			
	Feb.	4.	Shastri, Haraprasad
1887.			
5	Aug.	25.	Criper, W. R.
1888.			
	June	6.	Pennell, A. P.
1889.			
	Mar.	6.	La Touche, T. H. D.
1890.			
	Mar.	5.	Ray, Sir Prafulla C.
1892.			
	Jan.	11.	Maclagan, Sir Edward D.
10	Feb.	1.	Bodding, P. O.
1893.			
	Aug.	31.	Tate, G. Passman
	Sept.	28.	Chaudhuri, B. L.
1894.			
	Feb.	7.	Singh, H.H. Vishwa Nath
	Sept.	27.	Vost, W.
1895.			
15	Mar.	6.	Bose, Sir Jagadis C.
	July	3.	Beatson-Bell, Sir Nicholas D.
	Sept.	19.	De, K. C.
1896.			
	Jan.	8.	Burn, Sir Richard
1897.			
	Dec.	1.	Seth, M. J.
1898.			
20	Jan.	5.	Dods, W. K.
	April	6.	Tagore, Sir Pradyot C.
	May	4.	Mookerjee, Sir R. N.
1899.			
	Aug.	29.	Singh, Sir Prabhu Narain
	Sept.	29.	Mukerjee, J. N.
1900.			
25	Dec.	5.	Grieve, J. W. A.
1901.			
	Mar.	6.	Khan, H. R
	,,	,,	Vogel, J. P.
	June	5.	Mann, H. H.
	Dec.	4.	Ross, Sir Edward D.
1902.			
	Feb.	5.	Shyam Lal. 30
	May	7.	Sen, J. N.
	July	2.	Doxey, F.
1904.			
	June	1.	Pilgrim, G. E.
	,,	,,	Tipper, G. H.
	July	6.	Talbot, W. S. 35
	Aug.	3.	Fermor, L. L.
	,,	,,	Stapleton, H. E.
1905.			
	Mar.	1.	Banerji, M.
	July	5.	Ghosh, A. C.
	Aug.	2.	McCay, D. 40
1906.			
	Jan.	3.	Chapman, J. A.
	Mar.	7.	Nahar, P. C.
	,,	,,	Woolner, A. C.
	June	6.	Mitra, M. N.
	Sept.	19.	Whitehead, R. B. 45
	Oct.	31.	Finlow, R. S.
	Dec.	5.	Mahalanobis, S. C.
1907.			
	June	5.	Suhrawardy, A. A.
	July	3.	Brown, J. C.
	,,	,,	Christie, W. A. K. 50
	Aug.	7.	Haines, H. H.
1908.			
	Jan.	1.	Brahmachari, U. N.
	Feb.	5.	Mukhopadhyaya, G. N.
	April	1.	Wordsworth, W. C.
	Nov.	4.	Bhattacharji, B. 55
1909.			
	Jan.	6.	Shirreff, A. G.
	Mar.	3.	Chakravarti, N.
	,,	,,	Sarvadhikary, Sir D. P.
	April	7.	Bentley, C. A.
	,,	,,	Singh, P. 60
	July	7.	Bazaz, R. K.
	,,	,,	Bhattacharji, S. N.
	Aug.	4.	Thompson, Sir J. P.
	Oct.	6.	Brown, P.

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65	Oct.	6.	Brühl, P.
	,,	,,	Gangoli, O. C.
	Nov.	3.	Christophers, S. R.
	1910.		
	May	4.	Dhavle, S. B.
	,,	,,	Kemp, S. W.
70	July	6.	Botham, A. W.
	Sept.	7.	Gravely, F. H.
	,,	,,	Ray, S. K.
	1911.		
	Feb.	1.	Insch, J.
	,,	,,	Law, N. N.
75	Mar.	1.	Mahtab, Sir Bijay Chand
	May	3.	Lomax, C. E.
	June	7.	Chatterjee, K. K.
	,,	,,	Hosain, M. H.
	July	5.	Sewell, R. B. S.
80	Nov.	1.	Ahmed, K.
	1912.		
	Jan.	10.	Kazim Shirazi, A. M.
	May	1.	Harley, A. H.
	June	5.	Misra, C.
	July	3.	Andrews, E. A.
85	,,	,,	Bomford, T. L.
	Sept.	4.	Ghosh, T.
	,,	,,	Singhi, B. S.
	1913.		
	Mar.	5.	Simonsen, J. L.
	April	2.	Calder, C. C.
90	June	4.	Majumdar, R. C.
	July	2.	Sinha, R.
	Nov.	5.	Fox, C. S.
	1914.		
	Mar.	4.	Bacot, J.
	April	1.	Chaudhuri, G. D.
95	July	1.	Law, S. C.
	Aug.	5.	Law, B. C.
	1915.		
	Feb.	3.	Khan, H. A. A.
	April	7.	Ohtani, Count K.
	Aug.	4.	Gurner, C. W.
100	Sept.	1.	Cleghorn, M. L. W.
	,,	,,	Das-Gupta, H. C.
	Oct.	27.	Chatterjee, Sir A. C.
	1916.		
	Feb.	2.	Majumdar, N. K.
	June	7.	Mahajan, S. P.
105	July	5.	Sarkar, G.
	1917.		
	April	4.	Awati, P. R.
	June	6.	Deb, H. K.
	,,	,,	Aiyangar, K. V. R.
	Aug.	1.	Bhandarkar, D. R.

1918.			
	Feb.	6.	Banerji, N. N.
110	,,	,,	Ghosh, E. N.
	,,	,,	Manen, Johan van
	,,	,,	Singh, B. M.
	April	3.	Das, J. R.
	,,	,,	Prashad, B.
115	,,	,,	Sinha, B. N.
	July	3.	Basu, C. C.
	Aug.	7.	Maitra, J. N.
	1919.		
	Feb.	5.	Yazdani, G.
	Mar.	5.	Gupta, S. P.
120	April	2.	Bal, S. N.
	,,	,,	Friel, R.
	June	4.	Matthai, G.
	Nov.	5.	Hemraj, R.
125	,,	,,	Pascoe, Sir E. H.
	1920.		
	Mar.	3.	Mahalanobis, P. C.
	,,	,,	Sundara Raj, B.
	,,	,,	Raye, N. N.
	April	7.	Dutt, K. K.
	May	5.	Ghosh, S. N.
130	June	2.	Majumdar, N. G.
	,,	,,	Skinner, S. A.
	,,	,,	Suhrawardy, H.
	July	7.	Knowles, R.
	,,	,,	Roy-Chaudhuri, H. C.
135	Aug.	4.	Dikshit, K. N.
	Sept.	1.	Chakladar, H. C.
	,,	,,	Chanda, R.
	,,	,,	Chatterjee, N. C.
	Dec.	1.	Connor, Sir F. P.
140	,,	,,	Akbar Khan, M.
	1921.		
	Jan.	5.	Ray, J.
	Feb.	2.	Jain, Chhote Lall
	,,	,,	Mukerjee, R.
	,,	,,	Mookerjee, S. C.
145	Mar.	2.	Acton, H. W.
	,,	,,	Agharkar, S. P.
	May	4.	Barnardo, F. A. F.
	June	1.	Muzamilullah Khan, Mohammad
150	Sept.	7.	Deb. P. K.
	,,	,,	Roy, H. C.
	Nov.	2	Hora, S. L.
	Dec.	7.	Barua, B. M.
	1922.		
	Feb.	1.	Bhattacharya, V. S.
155	,,	,,	Chopra, R. N.
	,,	,,	Raman, Sir C. V.
	April	5.	Abdul Ali, A. F. M.
	,,	,,	Bose, J. C.

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	June	5.	Bhattacharya, S. P.
160	Sept.	6.	Das-Gupta, S. N.
	Nov.	1.	Strickland-Anderson, Mrs.
	,,	,,	Sarkar, S. C.
	Dec.	6.	Blackett, Sir Basil P.

1923.

	Feb.	7.	Jinavijayaji, Muni
165	Mar.	7.	Labey, G. T.
	,,	,,	Stamp, L. D.
	May	2.	Collenberg, Baron H. R. von
	,,	,,	Harnett, W. L.
	,,	,,	Möller, H. P.
170	,,	,,	Shebbeare, E. O.
	June	6.	Bhanot, K. D.
	,,	,,	Howard, A.
	,,	,,	Hutton, J. H.
	,,	,,	Ottens, N.
175	Aug.	1.	Biswas, K. P.
	,,	,,	Stow, Sir A. M.
	Dec.	5.	Chopra, B. N.
	,,	,,	Meggitt, F. J.
	,,	,,	Barwell, N. F.
180	,,	,,	Jackson, P. S.
	,,	,,	Korke, V. T.
	,,	,,	Sen, H. H. Lakshman
	,,	,,	Pande, S. B.

1924.

	Feb.	6.	Mahindra, K. C.
185	Mar.	5.	Banerjee, P. N.
	,,	,,	Browne, H.
	,,	,,	Kanjilal M. N.
	,,	,,	Mukerji, S.
	,,	,,	Martin, T. L.
190	,,	,,	Mitter, Sir P. C.
	,,	,,	Mitter, Sir B. L.
	,,	,,	Mitter, D. N.
	,,	,,	Mukherjee, N. N.
	,,	,,	McPherson, J.
195	,,	,,	Chatterji, M. M.
	,,	,,	Sircar, N. N.
	,,	,,	Sircar, Sir N. R.
	April	2.	Bahl, K. N.
	,,	,,	Das, B. M.
200	,,	,,	Ghose, K.
	,,	,,	Judah, N. J.
	,,	,,	Richards, F. J.
	,,	,,	Haq, M.
	,,	,,	Mitra, J. C.
205	,,	,,	Ghose, Sir C. C.
	May	7.	Rose, G. F
	,,	,,	Bhattacharya, B.
	June	4.	Cooper, H.
	July	2.	Ray, A. C.
210	,,	,,	Ghose, B. B.
	,,	,,	Browne, L. E.
	,,	,,	Mookerjee, S. P.
	,,	,,	Ray, B. C.
	Aug.	6.	Chatterji, S. K.
	,,	,,	Nyss, Wm. B. S.
	,,	,,	Moloney, W. J. 215
	,,	,,	Roy-Chowdhury, B. K.
	,,	,,	Davies, L. M.
	Nov.	5.	Chattopadhyay, K. P.
	,,	,,	Baidil, A. M.
	,,	,,	MacGregor, A. D. 220
	,,	,,	Sahni, B.
	,,	,,	Mookerji, B. N.
	,,	,,	Asaduzzaman.
	,,	,,	Kapur, S.
	Dec.	3.	Siddiqi, A. 225
	,,	,,	Das, S. N.
	,,	,,	Mookerjee, J. N.
	,,	,,	Newman, Chas. F.
	,,	,,	Rao, H. S.
	,,	,,	Pushong, E. S. 230
	,,	,,	Rogers, T. E.
	,,	,,	Basu, J. N.
	,,	,,	Ghose, S. C.
	,,	,,	Sarkar, C. K.
	,,	,,	Hendry, C. A. 235
	,,	,,	Roerich, G. N.
	,,	,,	Sen, H. K.
	,,	,,	Khan, R. R.

1925.

	Jan.	7.	Banerjee, M. N.
	,,	,,	Dutt, K. C. 240
	Feb.	4.	Bhor, S. C.
	,,	,,	Guha, B. S.
	,,	,,	Menon, K. R.
	Mar.	4.	Benthall, E. C.
	,,	,,	Bhatnagar, J. L. 245
	,,	,,	Chaudhuri, J.
	,,	,,	Das, A. N.
	,,	,,	Deb, Kshitindra
	,,	,,	Mitter, P. C.
	,,	,,	Poddar, H. P. 250
	April	1.	Perier, F.
	,,	,,	Hobbs, H
	,,	,,	Mohomed, I. A.
	,,	,,	Laden La, S. W.
	,,	,,	Sidiq, H. S. M. 255
	,,	,,	Sen, B. C.
	,,	,,	Taraporewala, I. J. S.
	May	6.	Abbasi, M. A.
	,,	,,	Baral, G. C.
	,,	,,	Bose, H. M. 260
	,,	,,	Jatia, Sir O. M.
	,,	,,	Khanna, V. L.
	,,	,,	Koester, Hans
	,,	,,	Kolah, K. S.
	,,	,,	Rao, M. V. 265
	,,	,,	Staub, Max.
	,,	,,	Ukil, A. C.
	,,	,,	Wadia, D. N.
	June	3.	Datta, S. K.
	,,	,,	Lal, B. B. 270
	,,	,,	Musa, M.

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July 6. Bose, M. M.
„ „ Varma, S. L.
Aug. 2. Chhibber, H. L.
„ „ Coyajee, Sir J. C.
„ „ Pruthi, H. S.
„ „ Reuben, D. E.
Nov. 2. Acharya, P.
„ „ Bradshaw, E. J.
„ „ Chattopādhyāya, K. C.
„ „ Crookshank, H.
„ „ Gee, E. R.
„ „ Kimura, R.
„ „ Ormond, E. C.
„ „ Sanaullah, M.
„ „ Sharif, M.
Dec. 7. Afzal, S. M.
„ „ Derviche-Jones, A.
„ „ Narayanaswami, V.
„ „ Stark, L.

1926.
Jan. 4. Brahmachari, I. B.
„ „ Chatterji, K. C.
„ „ Fleming, Andrew
„ „ Gaffar, Abdul
„ „ Hubert, Otto
„ „ Murray, H.
„ „ Shortt, H. E.
„ „ Sinton, J.A.
„ „ Stapleton, G. (Miss)
„ „ Sur, S. N.
Feb. 1. Edwards, C. A. H.
„ „ Ruthnaswamy, M.
„ „ Meston, Lord
„ „ Rao, T. R.
„ „ Husain, M. A.
„ „ Setna, S. B.
„ „ Viswanath, B.
„ „ Chaudhuri, H.
„ „ Kashyap, S. R.
„ „ Ghuznavi, Sir A. K.
„ „ Khaitan, D. P.
„ „ Hingston, H.
„ „ Harris, H. G.
„ „ Ghuznavi, A. H.
„ „ Khambata, R. B.
Mar. 1. Bannerjee, W. C.
„ „ McKay, J. W.
„ „ Mookerjee, S. C.
„ „ Snaith, J. F.
„ „ Gupta, D. N.
„ „ Mukherjee, A. N.
„ „ Datta, H. N.
„ „ Basu, N. K.
„ „ Kramrisch, Stella.
„ „ Bagnall, J. F.
April 5. Senior-White, R.
„ „ Ghose, B. C.
„ „ Parker, R. H.
April 5. Bhatia, M. L.
„ „ Mitter, K. N.
„ „ Jones, T.
„ „ Mitter, K. K.
May 3. Bhagwant Rai.
June 7. Lemmon, R. D.
July 5. Moin Y. J. Bahadur.
„ „ Mukhopadhyaya, P. K.
„ „ Tyson, J. D.
„ „ Lyne, H. W.
Aug. 2. Oak, M. R.
„ „ Sohoni, V. V.
„ „ Majumdar, D. N.
„ „ Mukherjee, J. N.
„ „ Khettry, B.
„ „ De, B.
Nov. 1. Jameson, T. B.
„ „ Collet, A. L.
„ „ Modi, J. R. K.
„ „ Westcott, F.
„ „ Barhut, T. K.
„ „ Pugh, L. P. E.
„ „ Ramanujaswami, P. V.
„ „ Mills, J. P.
„ „ Galstaun, S.
„ „ Chokhani, S.
„ „ Bagchi, P. C.
Dec. 6. Brahmachari, B. B.
„ „ Aiyangar, S. K.
„ „ Guha, S.
„ „ Banerjee, S. N.
„ „ Rau, A. S.
„ „ Roy, A. K.
„ „ Winfield, W. W.

1927.
Jan. 3. Chakravarty, N.
„ „ Bivar, H. G. S.
„ „ De, S. C.
„ „ Mohammed, G.
Feb. 7. Imam, A. M. S. H.
„ „ Chatterjee, A.
„ „ Bose, D. M.
„ „ Ghosh, J. C.
„ „ Captain, D. M.
„ „ Bhattacharya, D. R.
„ „ Mukherjee, H. N.
Mar. 7. Hopkinson, A. J.
„ „ Urquhart, W. S.
„ „ Sarma, Sir B. N.
„ „ Bake, A. A.
„ „ Rankin, Sir G.
„ „ Dikkers, F. G.
„ „ Stagg, M.
„ „ Ward, Mrs. D.
„ „ Ghosh, P. N.
„ „ Abdul Kadir, A. F. M.
„ „ Fukushima, N.
„ „ Wright, F. M.
April 4. Helland, B. A.
„ „ Suhrawardy, Sir Z. R. Z.

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April 4. Dewick, E. C.
390 ,, ,, Bridge, P. G.
May 2. Feegrade, E. S.
,, ,, Hürlimann, M.
,, ,, Clegg, E. L. G.
,, ,, Watson, A. H.
395 June 6. Nandi, Maharaja S. C.
,, ,, Jain, B.
,, ,, Staples, E. H.
,, ,, Sinha, S. P.
July 4. Chatterjee, P.
400 ,, ,, Chakravarti, C.
,, ,, Maitra, J. N.
,, ,, Vance, R. L
Nov. 7. Tarkatirtha, B.
,, ,, Mukherji, D.
405 ,, ,, Fitzgerald, T. J.
,, ,, Brahmachary, S. C.
Dec. 5. Namgyal, H.H. Sir Tashi
,, ,, Dechhen, H. H. Kunzang
,, ,, Chowdhury, C.
410 ,, ,, Peddie, J.
,, ,, Ghosh, K.
,, ,, Mukerjee, S. K.

1928.
Jan. 2. Basu, N. M.
,, ,, Dastidar, N. K. R.
415 ,, ,, Wright, Miss G. M.
,, ,, de Mello, F.
,, ,, Puri, I. M.
,, ,, Wats, R. C.
,, ,, Dutt, P. C.
420 ,, ,, Chaube, R. K.
,, ,, Mehta, M. H.
Feb. 6. Sinha, S. C.
,, ,, Kewal, G. S.
,, ,, Ezra, Sir D.
425 ,, ,, Reneman, Nico
,, ,, Evans, F. L.
,, ,, Mukerji, M. N.
,, ,, Rai, L. N.
,, ,, Williams, T. T
430 ,, ,, Mallik, S. N.
,, ,, Shumsher, Sir Kaiser
Mar. 5. Waight, H. G.
,, ,, Plessen, Baron L.
,, ,, Melhuish, R. A.
435 ,, ,, Gooptu, D. N.
,, ,, Das, Kedarnath
,, ,, Hawes, G. L.
,, ,, Fullerton, G. M.
,, ,, Watling, R. G.
440 ,, ,, Neogi, P.
,, ,, Biswas, C. C.
,, ,, Shaha, B.
,, ,, Eberl, Otto
April 2. Shaw, E B.
445 ,, ,, Sen, B. K.
April 2. Hargopal.
,, ,, Mitra, J. N.
,, ,, Roy, S. K.
,, ,, Mullick, K. C.
,, ,, Mitra, D. N.
,, ,, Bhattacharjee, N. C. 450
,, ,, Kumar, K. K.
,, ,, Chowdhury, Rai J.
,, ,, Harris, L. E.
,, ,, Mookerjea, B.
May 7. Chatterji, K. N. 455
,, ,, Jardine, A.
,, ,, Chatterjea, Sir N. R.
,, ,, Mookerjee, K. B.
,, ,, Tucci, G.
,, ,, Murray, E. F. O. 460
,, ,, Moledina, M. H.
,, ,, Chowdhury, A. N.
,, ,, Gupta, J. N.
,, ,, Basu, N.
,, ,, Sastri, H. 465
,, ,, Ghosal, U. N.
,, ,, Mallik, S. C.
,, ,, Basak, S. C.
,, ,, Lord Sinha of Raipur
,, ,, Saha, M. N. 470
June 4. Bhadra, S. N.
,, ,, Hobart, R. C.
,, ,, Narasimham, Y.
,, ,, Bhattasali, N. K.
July 2. Tagore, R. M. 475
,, ,, Roerich, N.
,, ,, Das, P. K.
,, ,, Hosain, Nawab Musharruf
Aug. 6. Jaitly, P. L.
,, ,, Urchs, O. 480
,, ,, Young, A. W.
,, ,, Mitra, S.
,, ,, Vijver, R. H. van de
,, ,, Ghuznavi, I. S. K.
,, ,, Drummond, J. G. 485
,, ,, Chatterjee, S. C.
,, ,, Elberg, A. A. J. (Mrs.)
,, ,, Heron, A. M.
Nov. 5. Olpadvala, E. S.
,, ,, Bose Mullick, G. N. 490
,, ,, Ishaque, M.
,, ,, Keable, G.
,, ,, Choprha, G.
,, ,, Statham, R. M.
,, ,, Reinhart, W. 495
,, ,, Rahman, A. S. M. L.
,, ,, Galstaun, J. C.

1929.
Jan. 7. Basu, S. C.
,, ,, MacLean, E. V. 500
,, ,, Pillai, G. P.

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Jan. 7. Campbell Forrester, Mrs. Florence.
,, ,, Ghose, M. C.
Feb. 4. Narain, Hirde
505 ,, ,, de Gasparin, Edith
,, ,, Srimani, J.
,, ,, Jenkins, W. A
,, ,, Dev, Raja R.
Mar. 4. Agate, P. N.
510 ,, ,, Titus, M. T.
,, ,, Iyer, M. S.
,, ,, Travers, W L.
,, ,, Tagore, P. N.
,, ,, Goil, D. P.
515 ,, ,, Deb, P. N.
,, ,, Ahmad, D.
,, ,, Mitter, H. K.
,, ,, De, J. C.
,, ,, Basu, B. K.
520 ,, ,, Lunan, A. G.
,, ,, Mullick, P. N.
,, ,, Mitra, J. M.
,, ,, Boral. A P.
April 1. Ghose, D. P.
525 ,, ,, Asadullah, K. M.
,, ,, Rizvi, S. H. H.
,, ,, Ginwala, Sir P.
,, ,, Sen-Gupta, N. C.
May 6. Sharma, S. R.
530 ,, ,, Williams, H. F. F.
,, ,, Sastri, D. S. B.
,, ,, Pawsey, C. R.
,, ,, Sanyal, S. C.
,, ,, Aken, C. E. van
535 ,, ,, Kapur, Dewan R. C.
June 3. Sen, P. C.
July 1. Dunn, J. A
,, ,, Banerji, B. B.
,, ,, Mitra, S. L.
540 Aug. 5. Sommerfeld, A.
Nov. 4. Berthoud, G. F.
,, ,, Singh, J.
,, ,, Mitra, M. N.
,, ,, Cohen, D. J.
545 ,, ,, Cotter, G. de P.
,, ,, Campbell, G. R.
,, ,, Parry, N. E.
,, ,, Jarvis, R. Y.
,, ,, Edwards, L. B.
550 ,, ,, Siddiqi, M. Z.
Nov. 4. Kurup, P. C. K.
,, ,, Mallya, B. G.
Dec. 2. Jacob, J.
,, ,, Fisher, Bishop F. B.
,, ,, Khan, M. R. 555
,, ,, Fawcus, L. R.
,, ,, Thomas, H. W.
,, ,, Maynard, B. M.

1930.
Jan. 6. Jain, N. K.
,, ,, Haldar, S. K. 560
,, ,, Oven, H. G. von
,, ,, Bassewitz, Count
,, ,, Douglas, R.
,, ,, Hamilton, Sir D. M.
,, ,, McNair, G. B. 565
,, ,, Martin, M. F. C.
,, ,, Chakraverti, S. C.
Feb. 3. Sinha, Hon'ble S. K.
,, ,, Henderson, A. G.
,, ,, Mahtab, U. C. 570
,, ,, Korni, M. A.
,, ,, Pettigrew, W.
,, ,, Chakravarti, M. N.
,, ,, Ray, J. M.
Mar. 3 Mukharji, I. C. 575
,, ,, Seth, T. N.
,, ,, Ashton, H. S.
April 7. Pessein, J. F.
,, ,, Ahmad, S. K.
,, ,, Swami, V. N. 580
May 5. Deo, P. C. Bhanj
,, ,, Matthias, O. G.
,, ,, Mallam, G. L.
,, ,, Cooper, G. A. P.
June 2. Kenny, D. E. C. 585
,, ,, Oyevaar, J. J.
July 7. Mahudavala, J. J.
Aug. 4. Popper, S. W.
,, ,, Raparia, T. C.
Nov. 3. Sahaya, S. 590
,, ,, Austin, G J.
,, ,, Rahman, S. K.
,, ,, Quirke, J. P. F.
,, ,, Newman, C. D.
,, ,, Mackenzie, A. H. 595
Dec. 1. Roy, Kumar K.

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(*Chronological.*)

5-11-84 C. S. Middlemiss (30 N.).
4- 2-85 H. P. Shastri (12 N.).
6- 6-88 A. P. Pennell (88 F.).
6- 3-89 T. H. D. La Touche (10 N.).
5 11- 1-93 Sir Edward D. Maclagan (94 R.).
1- 2-93 P. O. Bodding (14 N.).
31- 7-93 G P. Tate (23 N.).
27- 9-94 W. Vost (94 F.).
3- 7-95 Sir Nicholas D. Beatson-Bell (95 N.).
10 19- 9-95 K. C. De (26 R.).
3- 5-98 Sir R. N. Mookerjee (29 R.).
5-12-00 J. W. A. Grieve (00 F.).
6- 2-01 J. Ph. Vogel (25 F.).
2- 7-02 F. Doxey (28 R.).
15 1- 6-04 G. H. Tipper (27 N.).
28- 9-04 H. E. Stapleton (26 R.).
2- 8-05 D. McCay (29 F.).
3- 1-06 J. A. Chapman (28 N.).
7- 3-06 A. C. Woolner (28 N).
20 19- 7-06 R. B. Whitehead (26 N.).
3- 7-07 J. Coggin Brown (28 N.)
3- 7-07 W. A. K. Christie (29 N.).
1- 1-08 U. N. Brahmachari (27 R.).
7- 4-09 C. A. Bentley (30 N.).
25 6-10-09 P. J. Brühl (28 N.).
4- 5-10 S. B. Dhavle (10 N.)
4- 5-10 S. W. Kemp (29 F.).
1- 2-11 Jas. Insch (28 R.)
7- 6-11 M. Hidayat Hosain (27 N.).
5- 7-11 R. B. S. Sewell (28 N.). 30
1-11-11 Kamaluddin Ahmad (24 N.).
5- 3-13 J. L. Simonsen (19 N.).
4- 3-14 J. Bacot (14 F.).
5- 7-16 G. Sircar (29 N.).
6- 2-18 E. N. Ghosh (25 R.). 35
6- 2-18 Johan van Manen (25 R.).
3- 4-18 B. Prashad (29 R.)
2-11-21 S. L. Hora (30 N.).
6- 6-23 A. Howard (30 N.).
5-12-23 H.H. Lakshman Sen (24 N.). 40
7- 5-24 B. Bhattacharya (24 N.).
6- 8-24 L. M. Davies (24 N.).
3-12-24 G. Roerich (28 F.).
6- 6-27 B. D. Jain (28 R.).
5-12-27 Chhajuram Chowdhury (27 R.). 45
5-12-27 H.H. Sir Tashi Namgyal (27 N.).
5-12-27 H.H. Kunzang Dechhen (27 N.).
6- 2-28 Sir D. Ezra (28 R.).
6- 2-28 Sir Kaiser Shumsher (28 N.).
2- 7-28 N. Roerich (28 F.). 50
5-11-28 W. Reinhart (28 F.).
3- 3-30 H. S. Ashton (30 N.).

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SPECIAL HONORARY CENTENARY MEMBER.

Date of Election.	
15-1-84	A. H. SAYCE, *Professor of Assyriology, Queen's College.* Oxford, England.

ASSOCIATE MEMBERS.

Date of Election	
7-12-10	*H. HOSTEN, REV., S.J. St. Joseph's College, Darjeeling.
1-2-22	†PIERRE JOHANNS, REV., S.J., B.LITT. (OXON.), *Professor of Philosophy.* St. Xavier's College, 30, Park Street, Calcutta.
1-2-22	†ANANTAKRISHNA SASTRI, MAHAMAHOPADHYAYA. 57/1, Sreegopal Mullick Lane, Calcutta.
6-2-24	*V. IVANOW. c/o Asiatic Society of Bengal, 1, Park Street, Calcutta.
6-2-24	*KAMALAKRISHNA SMRITITIRTHA, MAHAMAHOPADHYAYA. Bhatpara, 24-Parganas.
1-2-26	DURGADAS MUKHERJEE, M.A., *Professor.* 35, Ballygunge Circular Road, Calcutta.
2-5-27	N. N. VASU, RAI SAHEB. 20, Visvakosh Lane, Baghbazar, Calcutta.
2-12-29	SARAT CHANDRA ROY, RAI BAHADUR, M.A., B.L. Church Road, Ranchi.

† Re-elected for a further period of five years on 7-3-1927 under Rule 2c.

* Re-elected for a further period of five years on 4-2-1929 under Rule 2c.

INSTITUTIONAL MEMBERS.

Date of Election.	
28-10-29	The Legatum Warnerianum (Oriental Department), University of Leyden, Leyden, Holland.
2-12-29	The Adyar Library, Adyar, Madras S.

ORDINARY FELLOWS

Date of Election.	
2-2-10	Haraprasad Shastri, C.I.E., M.A., D.LITT.
2-2-10	T. H. D. La Touche, B.A., F.G.S.
2-2-10	Sir Prafulla Chandra Ray, KT., C.I.E., M.A., D.SC.
2-2-10	Sir E. D. Ross, KT., C.I.E., PH.D.

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Date of Election	
7-2-12	Sir J. C. Bose, KT., C.S.I., C.I.E., M.A., D.SC., F.R.S.
7-2-12	P. J. Brühl, I.S.O., F.G.S., PH.D., F.C.S.
7-2-12	S. R. Christophers, C.I.E., O.B.E., I.M.S.
7-2-12	C. S. Middlemiss, C.I.E., B.A., F.G.S., F.R.S.
5-2-13	J. Ph. Vogel, PH.D., LITT.D.
5-2-13	S. W. Kemp, B.A., D.SC.
3-2-15	G. H. Tipper, M.A., F.G.S., M.INST.M.M.
3-2-15	H. H. Haines, C.I.E., F.C.H., F.L.S.
2-2-16	Sir Richard Burn, KT., C.I.E., I.C.S.
2-2-16	L. L. Fermor, O.B.E., A.R.S.M., D.SC., F.G.S.
7-2-17	F. H. Gravely, D.SC.
6-2-18	J. L. Simonsen, D.SC., F.I.C.
6-2-18	D. McCay, M.D., M.R.C.P., I.M.S.
6-2-18	A. A. Suhrawardy, M.A., PH.D., D.LITT., LL.D.
5-2-19	J. Coggin Brown, O.B.E., M.I.M.E., F.G.S.
5-2-19	W. A. K. Christie, B.SC., PH.D., M.INST.M.M.
5-2-19	D. R. Bhandarkar, M.A., PH.D.
5-2-19	R. B. Seymour Sewell, M.A., M.R.C.S., L.R.C.P., F.Z.S., I.M.S.
2-2-21	U. N. Brahmachari, M.A., PH.D., M.D.
2-2-21	B. L. Chaudhuri, B.A., D.SC., F.L.S., F.R.S.E.
1-2-22	Sir Edwin H. Pascoe, KT., M.A., D.SC., SC.D., F.G.S.
1-2-22	Ramaprasad Chanda, B.A.
7-2-23	G. N. Mukhopadhyaya, B.A., M.D.
4-2-25	M. Hidayat Hosain, PH.D.
4-2-25	Guy E. Pilgrim, D.SC., F.G.S.
4-2-25	Sir C. V. Raman, KT., M.A., D.SC., F.R.S.
1-2-26	P. O. Bodding, M.A.
7-2-27	R. Knowles, B.A., M.R.C.S., L.R.C.P., I.M.S.
7-2-27	Johan van Manen, C.I.E.
7-2-27	B. Sahni, D.SC.
7-2-27	A. C. Woolner, C.I.E., M.A.
6-2-28	H. E. Stapleton, M.A., B.SC., I.E.S.
6-2-28	B. Prashad, D.SC., F.Z.S., F.R.S.E.
6-2-28	Sir R. C. Temple, Bart., C.B., C.I.E., F.B.A., F.S.A.
6-2-28	C. A. Bentley, M.B., D.P.H., D.T.M. & H.
4-2-29	A. Howard, C.I.E., M.A.
4-2-29	J. H. Hutton, C.I.E., I.C.S., M.A., D.SC.
4-2-29	Sir Edward D. Maclagan, K.C.S.I., K.C.I.E.
3-2-30	H. W. Acton, M.R.C.S., L.R.C.P., I.M.S.
3-2-30	G. de P. Cotter, B.A., SC.D., M.INST.M.M., F.G.S.
3-2-30	S. L. Hora, D.SC., F.Z.S., F.R.S.E.
3-2-30	J. P. Mills, I.C.S., M.A., J.P.
3-2-30	Meghnad Saha, D.SC., F.R.S.

HONORARY FELLOWS

Date of Election.	
5-2-96	CHARLES ROCKWELL LANMAN. 9, Farrar Street, Cambridge, Massachusetts, U.S.A.
2-3-04	SIR GEORGE ABRAHAM GRIERSON, K.C.I.E., O.M., PH.D., D.LITT., LL.D., F.B.A., I.C.S. (*retired*). Rathfarnham, Camberley, Surrey, England.
6-9-11	ALFRED WILLIAM ALCOCK, C.I.E., M.B., LL.D., F.R.S. Heathlands, Belvedere, Kent, England.

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	Date of Election.	
	6-9-11	KAMAKHYANATH TARKAVAGISA, MAHAMAHOPADHYAYA. 11174, Shambazar Street, Calcutta.
5	5-8-15	SIR JOSEPH JOHN THOMSON, KT., O.M., M.A., SC.D., D.SC., LL.D., PH.D., F.R.S. Trinity College, Cambridge, England.
	6-12-16	G. A. BOULENGER, F.R.S., LL.D. Jardin Botanique du L'Etat, Brussels.
	2-5-17	HERBERT ALLEN GILES, *Professor*. 10, Selwyn Gardens, Cambridge, England.
	5-2-20	THE RIGHT HON'BLE SIR CHARLES ELIOT, K.C.M.G., C.B., M.A., LL.D., D.C.L. Beech Hill, Carleton, Skipton-in-Craven, England.
	4-2-20	SYLVAIN LEVI. Collège de France, rue Guy-de-la-Brosse 9, Paris, Ve.
10	4-2-20	SIR AUREL STEIN, K.C.I.E., PH.D., D.LITT., D.SC., D.O.L., F.B.A. Srinagar, Kashmir.
	4-2-20	A. FOUCHER, D.LITT. Boulevard Raspail 286, Paris, XVIe.
	4-2-20	SIR ARTHUR KEITH, M.D., F.R.C.S., LL.D., F.R.S. Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C. 2.
	4-2-20	R. D. OLDHAM, F.R.S., F.G.S., F.R.G.S. 1, Broomfield Road, Kew, Surrey, England.
	4-2-20	SIR DAVID PRAIN, KT., C.M.G., C.I.E., M.A., M.B., LL.D., F.R.S.E., F.L.S., F.R.S., F.Z.S., M.R.I.A. Royal Botanic Gardens, Kew, Surrey, England.
15	4-2-20	SIR JOSEPH LARMOR, KT., M.P., M.A., D.SC., LL.D., D.C.L., F.R.S., F.R.A.S. St. John's College, Cambridge, England.
	4-2-20	SIR JAMES FRAZER, KT., D.C.L., LL.D., LITT.D. Trinity College, Cambridge.
	4-2-20	J. TAKAKUSU. Imperial University of Tokio, Japan.
	2-3-21	F. W. THOMAS, C.I.E., M.A., PH.D., *Boden Professor of Sanskrit, University of Oxford*. 161, Woodstock Road, Oxford, England.
	7-6-22	SIR THOMAS HOLLAND, K.C.S.I., K.C.I.E., D.SC., F.R.S. Imperial College of Science and Technology, South Kensington, London, S.W. 7.
20	7-6-22	SIR LEONARD ROGERS, KT., C.I.E., M.D., B.S., F.R.C.P., F.R.S., I.M.S. 24, Cavendish Square, London, 4.
	7-1-25	STEN KONOW. Ethnographisk Museum, Oslo, Norway.
	7-3-27	THE RT. HON'BLE THE EARL OF LYTTON, P.C., G.C.S.I., G.C.I.E. Knebworth, Herts, England.
	4-7-27	C. SNOUCK HURGRONJE. Rapenburg 61, Leiden, Holland.
	5-12-27	LT.-COL. SIR T. WOLSELEY HAIG, K.C.I.E., C.S.I., C.B.E., M.A., C.M.G. 34, Gledstanes Road, West Kensington, London, W. 14.
25	2-12-29	SIR RAJENDRA NATH MOOKERJEE, K.C.I.E., K.C.V.O. 7, Harington Street, Calcutta.
	2-12-29	DR. CHARLES J. H. NICOLLE, *Director*. Pasteur Institute, Tunis.
	5-5-30	R. ROBINSON, F.R.S. Department of Chemistry, University of London, University College, Gower Street, London, W.C. 1.
	5-5 30	DR. W. CALAND. Koningslaan 78, Utrecht, Holland.
	5-5-30	DR. H. JACOBI. 59, Niebuhrstrasse, Bonn, Germany.

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Rule 40.—After the lapse of three years from the date of a member leaving India, if no intimation of his wishes shall, in the interval, have been received by the Society, his name shall be removed from the List of Members.

The following members are liable to removal from the next Member List of the Society under the operation of the above Rule :—

1. F. A. F. Barnardo. (1921.)
2. W. S. Talbot. (1904.)
3. Miss G. M. Wright. (1928.)
4. L. Stark. (1925.)
5. Baron H. Rudt von Collenberg. (1923.)
6. Muni Jinavijayaji. (1923.)

Loss of Members during 1930.

By Retirement.

Ordinary Members.

1. Mohd. Rafique. (1928.)
2. M. O. P. Iyengar. (1924.)
3. Sasadhar Roy. (1919.)
4. G. P. Majumdar. (1928.)
5. C. T. Glass-Hooper. (1929.)
6. R. Row. (1928.)
7. D. N. Ghosh. (1927.)
8. B. B. Shaha. (1928.) (Withdrawn.)
9. E. H. Kolb. (1929.)
10. Ayodhya Das. (1928.)
11. W. L. Rao. (1926.)
12. G. S. P. Vyasa. (1927.)
13. A. B. Piddington. (1928.)
14. A. C. Banerjee. (1925.)
15. B. R. Singh. (1926.)
16. U. N Das. (1929.)
17. F. E. James. (1927.)
18. H. L. Batra. (1925.)
19. Srikumar Banerjee. (1928.)
20. Ram Singh. (1926.)
21. Miss Shanti Nag. (1928.)
22. Dr Bidhan Chandra Roy. (1918.)
23. Syed Hasan Imam. (1928.)
24. A. R. Majumdar. (1928.)
25. M. A. S. Vaile. (1924.)
26. C. Bhakaraiya. (1926.) (Withdrawn.)
27. S. N. Gupta. (1926.)
28. Kalidas Nag. (1926.)
29. G. Shanks. (1923.)
30. J. N. Becker. (1926.)
31. P. M. Chatterji. (1929.)
32. K. Zachariah. (1928.)
33. E. F. Oaten. (1925.)

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34. Oswald Martin. (1920.)
35. N. D. Calder. (1926.)
36. S. K. Belvalkar. (1915.)
37. Md. Abdur Rahman Khan. (1928.)
38. M. S. Krishnan. (1928.)
39. M. N. Mukherjee. (1928.)
40. Sudhir Kumar Basu. (1928.)
41. W. A. Buyers. (1925.)
42. A. S. Triton. (1927.)
43. P. C. Sinha. (1925.)
44. F. L. De. (1924.)
45. J. C. French. (1927.)

By Death.

Ordinary Members.

1. H. G. Greaves. (1905.)
2. N Gupta. (1923.)
3. J. N. Bose (1929.)
4. J. L. James. (1926.)
5. R. D. Banerji. (1907.)
6. B. K. Ghosh. (1926.)
7. Sir B. C. Mitter. (1924.)
8. Debakar Dey. (1928.)
9. D. C. Phillott. (1889.)
10. W. H. Miles. (1884.)
11. R. D. Mehta. (1886.)
12. A. Alker. (1923.)

Associate Members.

1. A. Führer. (1885.)
2. A. H. Francke. (1902.)

Honorary Fellow.

1. A. A. Macdonell. (1922.)

Under Rule 38.

1. S. Banerji. (1922.)
2. P. C. De. (1927.)
3. Phanindranath De. (1926.)
4. M. B. Mirza. (1925.)
5. P. N. Misra. (1919.)
6. Victor N. Narayan. (1918.)
7. Md. B. Hossain. (1925.)

Under Rule 40.

1. Wilhelm von Pochhammer. (1925.)

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MEDALLISTS.

ELLIOTT GOLD MEDAL AND CASH.

Recipients.

1893 Chandra Kanta Basu.
1895 Yati Bhusana Bhaduri
1896 Jnan Saran Chakravarti.
1897 Sarasi Lal Sarkar.
1901 Sarasi Lal Sarkar.
1904 Sarasi Lal Sarkar. / Surendra Nath Maitra.
1907 Akshoy Kumar Mazumdar.
1911 Jitendra Nath Rakshit. / Jatindra Mohan Datta.
1913 Rasik Lal Datta. / Saradakanta Ganguly. / Nagendra Chandra Nag. / Nilratan Dhar.
1918 Bibhutibhushan Dutta.
1919 Jnanendra Chandra Ghosh.
1922 Abani Bhusan Datta.
1923 Bhailal M. Amin.
1926 Bidhu Bhusan Ray.
1927 Kalipada Biswas.

BARCLAY MEMORIAL MEDAL.

Recipients.

1901 E. Ernest Green.
1903 Sir Ronald Ross, KT., K.C.B., C.I.E, K.C.M.G., M.R.C.S., F.R.C.S., D.P.H., LL.D., D.SC., M.D., F.R.S.
1905 D. D. Cunningham, C.I.E., F.R.S.
1907 A. W. Alcock, C.I.E., M.B., LL.D., F.R.S.
1909 Sir David Prain, KT., C.I.E., C.M.G., M.A., M.B., LL.D., F.R.S.E., F.L.S., F.Z.S., M.R.I.A., F.R.S.
1911 Carl Diener.
1913 William Glen Liston, C.I.E., M.D., D.P.H.
1915 J. S. Gamble, C.I.E., M.A., F.R.S.
1917 H. H. Godwin-Austen, F.R.S., F.Z.S., F.R.G.S.
1919 N. Annandale, C.I.E., D.SC., C.M.Z.S., F.L.S., F.R.S., F.A.S.B.
1921 Sir Leonard Rogers, KT., C.I.E., M.D., B.S., F.R.C.P., F.R.C.S., F.R.S.
1923 S. R. Christophers, C.I.E., O.B.E., F.R.S., F.A.S.B, M.B., LT.-COL., I.M.S.
1925 J. Stephenson, C.I.E., B.SC., M.B., CH.B., F.R.C.S., F.R.S.E., I.M.S.
1927 S. W. Kemp, B.A., D.SC., F.A.S.B.
1929 Albert Howard, C.I.E., M.A., F.A.S.B.

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SIR WILLIAM JONES MEMORIAL MEDAL.

Recipients.

1927 Sir Malcolm Watson, KT., LL.D. (HON.), M.D., C.M., D.P.H.
1928 Sir George A. Grierson, K.C.I.E., O.M., PH.D., D.LITT., LL.D., F.B.A., HON. F.A.S.B., I.C.S. (*retired*).
1930 Dr. Felix H. D'Herelle.

ANNANDALE MEMORIAL MEDAL.

Recipients.

1927 Fritz Sarasin.
1930 Dr. Charles Gabriel Seligman, M.D., F.R.C.P., F.R.S.

JOY GOBIND LAW MEMORIAL MEDAL.

Recipient.

1929 Max Weber.

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PROCEEDINGS OF THE ORDINARY MONTHLY MEETINGS, 1930.

JANUARY, 1930.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 6th, at 5-30 P.M.

PRESENT.

W. A. K. Christie, Esq., B.Sc., Ph.D., M.Inst.M.M., F.A.S.B., Vice-President, in the Chair.

Members :

Agate, Mr. P. N.
Asadullah, Mr. K. M.
Basu, Mr. J. N.
Chakravarti, Mr. Chintaharan
Chatterjee, Mr. P. P.
Chatterjee, Mr. P. M.
Chatterjee, Mr. S. C.
Chatterji, Mr. M. M.
Chaudhuri, Dr. B. L.
Chaudhuri, Mr. J.
Das, Dr. Kedarnath
Fawcus, Mr. L. R.
Fermor, Dr. L. L.
Ghose, Mr. B. B.
Hosain, Dr. M. H.
Insch, Mr. James
Mallik, Mr. S. N.
Manen, Mr. Johan van
Mitra, Kumar M. N.
Ray, Kumar S. K.
Siddiqi, Dr. M. Z.
Stagg, Major M.
Stapleton, Mr. H. E.
Watling, Mr. R. G.
Young, Rev. A. W.
and others.

Visitors :

Kan, Mr. J. van
MacRobert, Lady
Raja, Mr. C. Kunhan
Watling, Mrs.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of thirteen presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for for election as Ordinary Members :—

(1) *Jain, Nirmal Kumar,* Devashramam, Arrah.
Proposer : U. N. Brahmachari.
Seconder : S. L. Hora.

(2) *Bill, Sydney Alfred,* The Ven'ble Archdeacon of Lucknow, M.A. (Cantab.), The Parsonage, Naini Tal, Kumaon, U.P.
Proposer : N. Barwell.
Seconder : Johan van Manen.

(3) *Haldar, Sudhindra Kumar,* Indian Civil Service, Calcutta Club, 241, Lower Circular Road, Calcutta.
Proposer : Baini Prashad.
Seconder : Johan van Manen.

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(4) *Oven, H. G. von,* Dr., Consul-General for the Netherlands at Calcutta, 7, Alipur Park Lane, Calcutta.
Proposer : C. E. van Aken.
Seconder : Johan van Manen.

(5) *Bassewitz, Count,* Consul-General for Germany, 227-1, Lower Circular Road, Calcutta.
Proposer : U. N. Brahmachari.
Seconder : Johan van Manen.

(6) *Douglas, Robert,* Indian Civil Service, District Magistrate, Burdwan.
Proposer : W. A. K. Christie.
Seconder : Johan van Manen.

(7) *Hamilton, Sir Daniel Mackinnon,* Retired Partner, Messrs. Mackinnon Mackenzie & Co., Balmacara, Rosshire, Scotland.
Proposer : Sir R. N. Mookerjee.
Seconder : Johan van Manen.

(8) *McNair, George Burgh,* Solicitor, Messrs. Morgan & Co., 5, Harington Street, Calcutta.
Proposer : Sir R. N. Mookerjee.
Seconder : Johan van Manen.

(9) *Martin, M. F. C.,* Royal Engineers, Office of the Garrison Engineer, Allahabad.
Proposer : H. E. Stapleton.
Seconder : Johan van Manen.

(10) *Chakraverti, Shrish Chandra,* B.L., Attorney-at-Law, High Court, Calcutta ; 2, Marquis Street, Calcutta.
Proposer : M. M. Chatterji.
Seconder : B. K. Basu.

The General Secretary reported the death of :—

(14) Herbert C. Robinson (An Ordinary Member, 1918).

The General Secretary reported the following loss of membership during the last month by resignation :—

(35) Sisir Kumar Maitra (An Ordinary Member, 1918).

The General Secretary welcomed, on behalf of the Society, their visitor Prof. J. van Kan of Batavia, lately President of the Royal Batavian Society of Arts and Sciences, and requested him to convey, on behalf of the Asiatic Society of Bengal, the most cordial and appreciative greetings to the old sister Society of Batavia.

The following papers were read :—

1. H. E. Stapleton.—*A Find of* 182 *Silver Coins of Kings of the Husainī and Surī Dynasties from Raipārā, Thāna Dohar, District Dacca, Eastern Bengal.*
2. Guiseppe Tucci.—*Animadversiones Indicae.*
3. B. Chopra.—*On a 'Trap-door' fishing Trap used in the Myitkina District, Upper Burma.*
4. V. V. Sohoni.—*Some abnormal Thunder-storms of Calcutta.*
5. E. Blatter.—*New Species of Indian Plants.*

After the reading of the papers the following exhibit was shown and commented upon :—

1. Johan van Manen.—*Two Tibetan Temple Trumpets.*

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The Chairman announced the result of the ballot for the election of Ordinary Members and declared all candidates duly elected.

The Chairman announced that a meeting of the Medical Section had been arranged for to be held on the 20th January.

The Chairman announced that the Annual Meeting of the Society would take place on Monday, the 3rd February, 1930, and invited the members present to communicate with the General Secretary the names and addresses of non-members to whom they wished invitations to be issued.

The General Secretary reported the issue of a revised edition of the Bibliotheca Indica catalogues.

The General Secretary reported the issue of the 3rd part of Sir George Grierson's Kashmiri Dictionary.

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FEBRUARY, 1930.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 3rd, immediately after the termination of the Annual Meeting.

PRESENT.

LT.-COL. R. B. SEYMOUR SEWELL, M.A., Sc.D. (Cantab.), M.R.C.S., L.R.C.P., F.L.S., F.Z.S., I.M.S., F.A.S.B., President, in the Chair.

Members :

Brown, Mr. Percy
Chatterjee, Mr. P. P.
Connor, Sir Frank
Fermor, Dr. L. L.
Fleming, Mr. Andrew
Ghose, Mr. T. P.
Insch, Mr. James
Jacob, Mr. J.
Knowles, Lt.-Col. R.
Mallya, Major B. G.
Manen, Mr. Johan van
Sommerfeld, Mr. A.
Stapleton, Mr. H. E.
Watling, Mr. R. G.

The minutes of the last meeting were read and confirmed.

The General Secretary announced that the presentations of books, etc., received during the last month would be exhibited at the next Ordinary Monthly Meeting.

The following candidates were balloted for for election as Ordinary Members :—

(11) *Sinha, The Hon'ble Sushil Kumar*, B.A. (Oxon.), Indian Civil Service, District and Sessions Judge, Murshidabad, Berhampore, Bengal.

Proposer : J. C. French.
Seconder : Johan van Manen.

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(12) *Henderson, Alexander Gavin*, B.A. (Oxon.), I.C.S., Buscot Park, Faringdon, Berks; Flat No. 9, 4, Elysium Row, Calcutta.
Proposer : N. Barwell.
Seconder : Johan van Manen.

(13) *Mahtab, Uday Chand*, Maharaj Kumar of Burdwan, The Palace, Burdwan.
Proposer : N. Barwell.
Seconder : Johan van Manen.

(14) *Korni, Michael Alexandrowitz*, (Dr.), Architect and Engineer, Messrs. Bird & Co.: 53, Chowringhee Road, Calcutta.
Proposer : N. Barwell.
Seconder : Johan van Manen.

(15) *Pettigrew, Rev. William*, Missionary, American Baptist Foreign Mission Society, P.O. Kangpokpi, Manipur, Assam.
Proposer : A. Willifer Young.
Seconder : Johan van Manen.

(16) *Chakravarti, M. N.*, M.Sc., A.T.S. at Delhi; 5053, Connaught Place, New Delhi.
Proposer : U. N. Brahmachari.
Seconder : Johan van Manen.

(17) *Ray, Jatindra Mohan*, B.A., C.E., M.I.E.; 49, Lansdowne Road, Calcutta.
Proposer : U. N. Brahmachari.
Seconder : M. Hidayat Hosain.

(18) *Mitra, Mrigendra Lal*, F.R.C.S., M.D., Professor of Surgery, Carmichael Medical College : 10, Park Street Extension, Calcutta.
Proposer : U. N. Brahmachari.
Seconder : M. Hidayat Hosain.

The General Secretary reported the death of :—

(1) H. G. Graves (An Ordinary Member, 1905).

The General Secretary reported the following loss of membership during the last month by resignation :—

(36) Mrs. C. de Beauvoir Stocks (An Ordinary Member, 1925).
(37) B. N. Ghosh (An Ordinary Member, 1928).
(1) Mohammad Rafique (An Ordinary Member, 1928).
(2) Sasadhar Roy (An Ordinary Member, 1919).
(3) M. O. P. Iyengar (An Ordinary Member, 1924).

The General Secretary reported that the election of (1) C. L. Kayath-Khoja (Elected on 30-9-29) had become null and void, under Rule 9.

The General Secretary reported that (1) Abdul Halim (Elected on 30-9-29) had withdrawn his application for membership.

The Chairman announced the result of the ballot for the election of Ordinary Members and declared all candidates duly elected.

The Chairman announced that a meeting of the Medical Section had been arranged for to be held on Monday, the 10th February, 1930.

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MARCH, 1930.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 3rd, at 5-30 P.M.

PRESENT.

LT.-COL. R. B. SEYMOUR SEWELL, M.A., Sc.D. (Cantab.), M.R.C.S., L.R.C.P., F.L.S., F.Z.S., I.M.S., F.A.S.B., President, in the Chair.

Members :

Bose, Mr. M. M.
Brahmachari, Dr. U. N.
Brown, Mr. Percy
Chatterjee, Mr. P. M.
Chaudhuri, Dr. B. L.
Das-Gupta, Mr. H. C.
De, Mr. K. C.
Ghose, Mr. B. B.
Ghose, Mr. T. P.
Ghosh, Dr. E. N.
Gurner, Mr. C. W.
Hobbs, Mr. Harry
Hora, Dr. S. L.
Insch, Mr. James
Jacob, Mr. J.
Manen, Mr. Johan van
Mukherjee, Dr. S. K.
Prashad, Dr. B.
Sanaullah, Mr. Md.
Thomas, Mr. H. W.
Young, Rev. A. W.
and others.

Visitors :

Bhaduri, Mr. J.
Solomon, Mr. F. J.

The President announced that Dr. U. N. Brahmachari had generously offered to meet the expenses of providing tea to the Members on Ordinary Monthly Meeting days. For this purpose, Dr. Brahmachari had also presented a set of the required materials and utensils to the Society. In future, tea would be provided in the Members' retiring room on the ground floor from 5 to 5-30 before each Monthly Meeting. The President expressed his thanks to Dr. Brahmachari on behalf of the Members for his generosity.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of thirty presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for for election as Ordinary Members :—

(19) *Mukharji, Isan Chandra*, Rai Bahadur, Tazimi Sardar and Retired Member of Jaipur Council, Jaipur, Rajputana : 126-2, Hazra Road, Kalighat, Calcutta.
Proposer : K. C. Mahindra.
Seconder : Baini Prashad.

(20) *Seth, T. N.*, M.Sc., Ph.D. (Cantab.), M.B.S. (England), Lecturer in Bio-chemistry, Department of Physiology, Medical College, Patna.
Proposer : S. L. Hora.
Seconder : B. S. Guha.

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(21) *Ashton, Hubert Shorrock*, Merchant, Trueloves, Ingatestone, Essex, England.
Proposer : R. B. Seymour Sewell.
Seconder : Johan van Manen.

(22) *Nazim-ud-Din, The Hon'ble Mr. Khwaja*, C.I.E., Barrister-at-law, Minister for Education, Government of Bengal, 9, Convent Road, Entally, Calcutta.
Proposer : R. B. Seymour Sewell.
Seconder : Sir P. C. Mitter.

(23) *Maulik, Satyendra Chandra Ghosh*, M.Sc., B.L., Lieut. A.I.R.O., Landholder, Advocate; 10, Rowland Road, Calcutta *and* Panchthupi, Dt. Murshidabad.
Proposer : K. C. De.
Seconder : James Insch.

The General Secretary reported the following loss of membership during the last month by resignation :—

(4) G. P. Majumdar (An Ordinary Member, 1928).
(5) C. T. Glass-Hooper (An Ordinary Member, 1929).
(6) Debendra Nath Ghosh (An Ordinary Member, 1928).
(7) R. Row (An Ordinary Member, 1928).
(8) B. B. Shaha (An Ordinary Member, 1928).
(9) E. H. Kolb (An Ordinary Member, 1929).

The General Secretary reported that the election of (2) Nirmal Kumar Gupta (Elected on 4-11-29) had become null and void, under Rule 9.

The General Secretary reported that Prof. J. L. Bhatnagar, whose name was announced as lapsed under Rule 38 on 2-12-29, had paid up his arrears of subscription and so regularised his position.

The General Secretary reported the constitution of the various standing Committees of the Society for the ensuing year to be as follows :—

Finance Committee :

President.
Treasurer.
General Secretary. } *Ex-officio.*
MM. H. P. Shastri.
Mr. J. C. Mitra.
Mr. James Insch.

Library Committee :

President.
Treasurer.
General Secretary.
Philological
Jt. Philological
Biological
Physical Science } Secretaries.
Anthropological
Medical
Library
} *Ex-officio.*
Mr. H. E. Stapleton.

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Publication Committee :

President.
Treasurer.
General Secretary.
Philological
Jt. Philological
Biological
Physical Science
Anthropological
Medical
Library
} Secretaries.
} *Ex-officio.*
Dr. U. N. Brahmachari.

The following papers were read :—

1. C. W. Gurner.—*The Psychological Similie in Aśvaghosha.*
2. Baini Prashad.—*Some Reflections on Zoological Research in India.*
3. Ekendra Nath Ghosh.—*Studies on Rigvedic Deities. I. Pūṣan.*
4. J. L. Bhaduri.—*Some Notes on the Arterial System of the Common Toad* Bufo melanostictus *Schneid.*
5. W. Ivanow.—*Notes on the Dialect of Alamut.*
6. M. Hidayat Hosain (and) M. Sanaullah.—*The Tadhkirat-ul-'Ulamā'.*

The Chairman announced the result of the ballot for the election of Ordinary Members and declared all candidates duly elected.

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APRIL, 1930.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 7th, at 5-30 P.M.

Present.

Lt.-Col. R. B. Seymour Sewell, M.A., Sc.D. (Cantab.), M.R.C.S., L.R.C.P., F.L.S., F.Z.S., I.M.S., F.A.S.B., President, in the Chair.

Members :

Asadullah, Mr. K. M.
Barwell, Lt.-Col. N. F.
Bose, Mr. M. M.
Brahmachari, Dr. U. N.
Chakravarti, Mr. C.
Chakravarti, Mr. Nilmani
Chatterjee, Mr. P. M.
Chaudhuri, Mr. J.
Das, Dr. Kedarnath
Das-Gupta, Prof. H. C.
De, Mr. K. C.
Doxey, Mr. Frederick
Guha, Dr. B. S.
Haq, Mr. Mahfuz-ul
Hobbs, Mr. Harry
Hora, Dr. S. L.
Jacob, Mr. J.
Manen, Mr. Johan van
Miles, Mr. W. H.
Ray, Prof. H. C.
Sanaullah, Mr. Md.
Siddiqi, Dr. M. Z.
Stagg, Major M.
Urchs, Dr. Oswald
Watling, Mr. R. G.
Young, Rev. A. W.
and others.

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Visitors :

Leveroy, Miss E.
Roehder, Mr. A.
Watling, Mrs. R. G.
Shellered, Miss H.
Solomon, Miss F. I.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of twelve presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for for election as Ordinary Members :—

(24) *Pessein, Rev. J. F.*, Catholic Missionary, Superior of the Catholic Missionary Sanatorium, Wellington, Nilgiris.
Proposer : A. Willifer Young.
Seconder : H. E. Stapleton.

(25) *Ahmad, Syed Khalil*, Provincial Service (retired), Zafar Manzil, Gaya.
Proposer : Abu Md. Syed Hassan Imam.
Seconder : M. Hidayat Hosain.

(26) *Ashraf Ali, Abul Muzaffar*, Bengal Registration Service, Landholder of Shillong and Kulaura, Sylhet, Sub-Registrar, Ghatail, Mymensingh.
Proposer : M. Hidayat Hosain.
Seconder : B. B. Ghose.

(27) *Swami, Vidya Nand*, Jasdan State, Kathiawad.
Proposer : A. C. Vidyabhusana.
Seconder : B. B. Ghose.

The General Secretary reported the deaths of :—

(2) N. Gupta (An Ordinary Member, 1923).
(3) Jogendra Nath Bose (An Ordinary Member, 1929).
(4) J. Langford James (An Ordinary Member, 1926).

The General Secretary reported the following loss of membership during the last month by resignation :—

(10) Ayodhya Das (An Ordinary Member, 1928).
(11) W. Lakshmana Rao (An Ordinary Member, 1926).
(12) Gauri Shanker Prasad Vyasa (An Ordinary Member, 1928).

The General Secretary reported that the election of (3) Sivaprosad Chatterji (Elected on 2-12-29), had become null and void, under Rule 9.

The General Secretary reported that :—

(1) C. Bhaskaraiya (resigned in October, 1929),
(2) B. B. Shaha (resigned in February, 1930),

had withdrawn their resignations, under Rule 34.

In accordance with Rules 2 and 13, the General Secretary announced that the Council proposed for election as Honorary Fellows of the Society of :—

(1) Prof. R. Robinson ;
(2) Prof. W. Caland ; and
(3) Prof. H. Jacobi.

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The General Secretary stated the grounds on which the recommendation was made.

The following papers were read :—

1. Nilmani Chakravartti.—*The End of Prasenajit; King of Kosala.*
2. Nilmani Chakravartti.—*An Ancient Indian Story in a Bengali Vratakatha.*
3. P. O. Matthai.—*Marriage Customs among the St. Thomas Christians of Malabar.*
4. Durgacharan Chatterji.—*A Collation of the printed Editions of the Sanskrit Text of the Nyāyabindu and the Nyāyabinduṭīkā with reference to the Tibetan Translation.*
5. B. R. Beotra.—*Gods and Temples in the Suket State.*

The following communications were made :—

1. M. Mahfuzul Haq.—*A new illustrated Manuscript of the Rubā'iyyāt of Umar-i-Khaiyyām (in the 'S. Najīb Ashraf Collection' of Al-Iṣlāḥ Library, Desna, Bihār).*
2. The General Secretary.—*A Note on the Borojhar Ruins.*

The following exhibit was shown and commented upon :—

1. S. L. Hora.—*Manuscripts of Hamilton Buchanan's 'Gangetic Fishes'.*

The Chairman announced the result of the ballot for the election of Ordinary Members and declared all candidates duly elected.

The Chairman announced that a meeting of the Medical Section had been arranged for to be held on Monday, the 14th April, 1930, at 6 P.M.

—◇—

MAY, 1930.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 5th, at 5-30 P.M.

Present.

Lt.-Col. R. B. Seymour Sewell, M.A., Sc.D. (Cantab.), M.R.C.S., L.R.C.P., F.L.S., F.Z.S., I.M.S., F.A.S.B., President, in the Chair.

Members :

Acton, Lt.-Col. H. W.
Asadullah, Mr. K. M.
Biswas, Mr. Kalipada
Bose, Mr. M. M.
Brown, Mr. Percy
Das-Gupta, Mr. H. C.
De, Mr. K. C.
Dikshit, Mr. K. N.
Fleming, Mr. A.
Ghose, Mr. B. B.
Ghose, Mr. T. P.
Haq, Mr. M. Mahfuz-ul
Hobbs, Mr. Harry
Hora, Dr. S. L.
Sanaullah, Mr. Md.
and others.

Visitor :

Sen-Gupta, Mr. J.

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The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of ten presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for for election as Ordinary Members :—

(28) *Deo, Pratap Chandra Bhanj*, Maharajah, Ruler of Mayurbhanj State, P.O. Baripada, Mayurbhanj, B.N.R.
Proposer : R. B. Seymour Sewell.
Seconder : Johan van Manen.

(29) *Matthias, Owen Gardiner*, Managing Director, Messrs. Smith Stanistreet & Co., Ld., Stanistreet House, 18, Convent Road, Entally, Calcutta.
Proposer : H. Cooper.
Seconder : H. W. Thomas.

(30) *Mallam, G. L.*, Captain, Census Superintendent, Peshawar, N.-W.F.P.
Proposer : J. H. Hutton.
Seconder : R. B. Seymour Sewell.

(31) *Cooper, G. A. P.*, Assistant, Messrs. Macneil & Co., 2, Fairlie Place, Calcutta.
Proposer : N. Barwell.
Seconder : R. Knowles.

The General Secretary reported the following loss of membership during the last month by resignation :—

(13) A. B. Piddington (An Ordinary Member, 1928).
(14) A. C. Banerjee (An Ordinary Member, 1925).
(15) B. R. Singh (An Ordinary Member, 1926).

The General Secretary reported that the election of (4) S. C. Chakravarti (Elected on 6-1-30) had become null and void, under Rule 9.

The General Secretary reported that (2) Ven'ble S. A. Bill (Elected on 6-1-30) had withdrawn his application.

The General Secretary reported that, in accordance with Rule 45, the Council submit for confirmation to the meeting the following change in the composition of the Council made in one of the Council Meetings held since the last Ordinary Monthly Meeting :—

Member of Council : Mr. M. Mahfuz-ul Haq, *vice* Dr. Baini Prashad, resigned.

The appointment was confirmed.

In accordance with Rules 2 and 13, the Chairman called for a ballot for the election as Honorary Fellows of the Society of :—

Prof. R. Robinson,
Dr. W. Caland, and
Dr. H. Jacobi,

proposed for election in the last Monthly Meeting.

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The following papers were read :—

1. Kalipada Biswas.—*Notes on the Organisms in the filtered Waters of Calcutta.*
2. H. C. Das-Gupta.—*On a Type of Sedentary Game prevalent in Shahpur, Punjab.*
3. Ekendra Nath Ghosh.—*Studies on Rigvedic Deities, II. Ṛbhus.*
4. E. Elgood.—*On the Significance of* Al-Baras *and* Al-Bahaq.

The following communications were made :—

1. M. Mahfuz-ul Haq.—*Two beautiful Persian Manuscripts of Jāmī's Tuḥfat-ul-Aḥrār and Hātifi's Shīrīn-ul-Khusraw, in the collection of Mr. S. Bashir Ali of Calcutta.*
2. S. L. Hora.—*Certain Ecological and Biological Observations on the remarkable Blennid Fish*—Andamia hetroptera (*Blkr*).

The Chairman announced the results of the ballots for the election of Ordinary Members and three Honorary Fellows, and declared all candidates duly elected.

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JUNE, 1930.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 2nd, at 5-30 P.M.

Present.

Mahamahopadhyaya Haraprasad Shastri, C.I.E., M.A., D. Litt., F.A.S.B., Philological Secretary, in the Chair.

Members :

Ahmad, Capt. D.
Chakravarti, Mr. Nilmani.
Chatterjee, Mr. P. P.
Coyajee, Sir J. C.
Das-Gupta, Mr. H. C.
Ghose, Mr. B. B.
Ghosh, Dr. E. N.
Mahindra, Mr. K. C.
Mehta, Mr. R. D.
Mukherjee, Mr. D.
Ray, Mr. J. M.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of ten presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for for election as Ordinary Members :—

(32) *Kenny, Dick Edward Courtenay*, Major, I.A., Deputy Commissioner, Andamans, Port Blair, Andamans.
Proposer : U. N. Brahmachari.
Seconder : Johan van Manen.

(33) *Oyevaar, J. J.*, Vice-Consul of the Netherlands, c/o. The Java Bengal Line; E-1, Clive Buildings, Clive Street (Post Box No. 71), Calcutta.
Proposer : Johan van Manen.
Seconder : K. C. De.

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The General Secretary reported the deaths of :—

(5) A. H. Francke (An Associate Member, 1902).
(6) R. D. Banerji (An Ordinary Member, 1909).

The Chairman gave a biographical sketch of Mr. R. D. Banerji, detailing his reminiscences of the late member as a student, scholar and archæologist.

It was resolved to communicate the condolences of the Society to the relatives of the deceased.

The General Secretary reported the following loss of membership during the last month by resignation :—

(16) F. E. James (An Ordinary Member, 1928).
(17) H. L. Batra (An Ordinary Member, 1925).
(18) S. K. Banerjee (An Ordinary Member, 1928).
(19) Ram Singh (An Ordinary Member, 1926).
(20) Mrs. Shanti Chatterjee (An Ordinary Member, 1927).
(21) Bidhan Ch. Roy (An Ordinary Member, 1918).
(22) Upendra Nath Das (An Ordinary Member, 1928).

The General Secretary reported that the election of (5) Mrigendra Lal Mitra (Elected on 3-2-30) had become null and void, under Rule 9.

The General Secretary reported that Mr. S. C. Chakravarti, whose name was announced as lapsed, under Rule 9, in the last Monthly Meeting, had since regularised his position and had consequently been admitted as a member.

In accordance with Rule 48 (*a*), the General Secretary reported that the Council, since the last Ordinary Monthly Meeting, had made the following change in the present Regulations regarding the Provident Fund of the Society :—

At the end of Regulation 8, add the words 'or investment in a Trustee Security'.

In accordance with Rules 37 and 38, the General Secretary announced that the names of the following Ordinary Members would be suspended as defaulters within the Society's building for the period of a month to be removed from the Society's registers for non-payment, unless the amount due be paid before the next Ordinary Monthly Meeting :—

1. Sasadhar Banerjee.
2. P. C. De.
3. M. B. Mirza
4. Kumar Victor Narain.
5. P. N. De.
6. P. N. Misra.
7. Md. Basheer Hosain.

The following papers were read :—

1. Nilmani Chakravarti.—*Ghoṭakamukha, a Predecessor of Kauṭilya and Vātsāyana.*
2. Sir J. C. Coyajee.—*The Shahnameh and the Feng-Shen-Yen I.*
3. Ekendra Nath Ghosh.—*Studies on Rigvedic Deities, III. Tvaṣṭr.*

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4. R. R. Haldar.—*The Chauhāns of Nāḍōl and Jālōr.*
5. S. Krishnaswami Aiyangar.—*The Kalabhra Interregnum. What it means in South Indian History?*
6. P. C. Mahalanobis.—*On Tests and Measures of Group Divergence.*

The Chairman announced the result of the ballot for the election of Ordinary Members and declared all candidates duly elected.

—◇—

JULY, 1930.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 7th, at 5-30 P.M.

Present.

Lt.-Col. R. B. Seymour Sewell, M.A., Sc.D. (Cantab.), M.R.C.S., L.R.C.P., F.L.S., F.Z.S., I.M.S., F.A.S.B., President, in the Chair.

Members:

Agharkar, Dr. S. P.
Chatterji, Mr. M. M.
Chaudhuri, Dr. B. L.
Das-Gupta, Mr. H. C.
Fleming, Mr. Andrew
Guha, Dr. B. S.
Hora, Dr. S. L.
Manen, Mr. Johan van
Ray, Kumar S. K.
Stagg, Major M.
Watling, Mr. R. G.
Young, Rev. A. W.

Visitors:

Chaudhuri, Mr. J. B.
Ray, Mr. Anandamohan

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of fourteen presentations of books, etc., which had been placed on the table for inspection.

The following candidate was balloted for for election as an Ordinary Member :—

(34) *Mahudavala, Jehangir J.*, B.Com. (Birmingham), Insurance Representative, 2-B, Camac Street, Calcutta.
Proposer: Sir J. C. Coyajee.
Seconder: B. B. Ghose.

The General Secretary reported the deaths of :—

7. B. K. Ghosh (An Ordinary Member, 1926).
8. A. Führer (An Associate Member, 1895).

The General Secretary reported the following loss of membership during the last month by resignation :—

(23) Syed Hasan Imam (An Ordinary Member, 1928).
(24) Akhil Ranjan Majumdar (An Ordinary Member, 1928).
(25) M. A. S. Vaile (An Ordinary Member, 1924).
(26) C. Bhaskaraiya (An Ordinary Member, 1926).

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In accordance with Rule 38, the General Secretary announced that the names of the following members, who had, since the last Ordinary Monthly Meeting, been suspended as defaulters within the Society's building, had now been removed as defaulters from the Society's registers for non-payment of dues :—

1. Sasadhar Banerjee.
2. P. C. De.
3. M. B. Mirza.
4. Kumar Victor Narain.
5. P. N. De.
6. P. N. Misra.
7. Md. Basheer Hosain.

The following papers were read :—

1. A. C. Sen.—*Studies on Indian Ichneumonidæ.* 1. *The external Morphology of a common Ichneumon-fly of India,* Xanthopimpla pedator, *Fabricius.*
2. H. Hosten.—*Letter of Friar Arnold, a German Franciscan in China* (1303-1305).
3. H. Hosten.—*Letter of Friar Peregrine, Second Bishop of Zayton, China* (*December* 30, 1318).
4. H. Hosten.—*Chelis, Chincheos* (*Chorii, Tochari*), *and Chinese in India, according to Manoel Godinho de Eredia* (1613).
5. J C. De.—*Religion and Kingship in Ancient Times.*
6. S. N. Roy.—*Tattooing in Orissa.*
7. S. T. Moses.—*The Besthas of Nellore.*
8. M. M. Chatterji.—*The Vedic Divisions.*
9. Jogendra Chandra Ghosh.—*Was Viśākha Datta a Bengali?*

The following exhibit was shown and commented upon :—

1. Johan van Manen.—*A Jarawa bucket and some Jarawa bows and arrows from South Andaman.*

The Chairman announced the result of the ballot for the election of the Ordinary Member and declared the candidate duly elected.

—◇—

AUGUST, 1930.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 4th, at 5-30 P.M.

Present.

Rai Upendra Nath Brahmachari Bahadur, M.A., M.D., Ph.D., F.A.S.B., Vice-President, in the Chair.

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Members:

Agharkar, Dr. S. P.
Asadullah, Mr. K. M.
Bose, Mr. M. M.
Brahmachary, Rai Bahadur S. C.
Chatterji, Mr. M. M.
Chaudhuri, Dr. B. L.
Coyajee, Sir J. C.
Fermor, Dr. L. L.
Ghosh, Dr. E. N.
Ghosh, Mr. T. P.
Hora, Dr. S. L.
Manen, Mr. Johan van
Shaha, Dr. B. B.
Stagg, Major M.
Stapleton, Mr. H. E.
Watling, Mr. R. G.
Young, Rev. A. W.
Popper, Mr. S. W.

Visitor:

Watling, Mrs. R. G.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of fifteen presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for for election as Ordinary Members:—

(35) *Popper, Stephen W.*, Merchant, c/o. Messrs. Havero Trading Co., Ltd., Commercial House, 15, Clive Street, Calcutta.
Proposer: Oswald Urchs.
Seconder: K. C. Mahindra.

(36) *Raparia, Tara Chand*, B.A., Business Manager, c/o. Messrs. Bansidhar Sumerchand & Co., Belangunj, Agra, U.P.
Proposer: K. C. Mahindra.
Seconder: S. L. Hora.

The General Secretary reported the death of:—

(9) Sir B. C. Mitter (An Ordinary Member, 1925).

The General Secretary reported the following loss of membership during the last month by resignation:—

(27) S. N. Gupta (An Ordinary Member, 1926).
(28) Kalidas Nag (An Ordinary Member, 1926).
(29) George Shanks (An Ordinary Member, 1923).

The General Secretary reported that the election of:—

(6) A. M. Ashraf Ali (Elected on 7-4-30)

had become null and void, under Rule 9.

The following papers were read:—

(1) Sir J. C. Coyajee.—*Sraosha Yasht—its Place in the History of Mysticism.*
(2) H. Hosten.—*Letters and other Papers of Fr. Ippolito Desideri, S.J., a Missionary in Tibet* (1713–21).
(3) Ekendra Nath Ghosh.—*Studies in Rigvedic Deities. IV. Trita and Viśvarūpa.*
(4) M. M. Chatterji.—*Bhagavad Gītā and Brahma Sūtra.*

The following exhibit was shown and commented upon:—

(1) S. L. Hora.—*The Apodal Fish "Apua."*

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The Chairman announced the result of the ballot for the election of the Ordinary Members and declared all candidates duly elected.

The Chairman announced that unless special notice was given there would be no Monthly Meetings during the recess months, September and October.

—◇—

NOVEMBER, 1930.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 3rd, at 5-30 P.M.

PRESENT.

LT.-COL. R. B. SEYMOUR SEWELL, M.A., Sc.D. (Cantab.), M.R.C.S., L.R.C.P., F.L.S., F.Z.S., I.M.S., F.A.S.B., President, in the Chair.

Members :

Asadullah, Mr. K. M.
Brahmachari, Dr. U. N.
Chatterjee, Mr. P. P.
Chaudhuri, Dr. B. L.
Das-Gupta, Mr. H. C.
Dods, Mr. W. K.
Fermor, Dr. L. L.
Fleming, Mr. Andrew
Ghose, Mr. T. P.
Ghosh, Dr. E. N.
Goil, Lt.-Col. D. P.
Guha, Dr. B. S.
Gurner, Mr. C. W.
Hora, Dr. S. L.
Insch, Mr. James
Keable, Rev. G.
Mallya, Major B. G.
Manen, Mr. Johan van
Mukherjee, Mr. D. D.
Mukherjee, Dr. J. N.
Ray, Mr. J. M.
Ray, Kumar S. K.
Stapleton, Mr. H. E.
Watling, Mr. R. G.
Young, Rev. A. W.
and others.

Visitors :

Aiyappan, Mr. A.
Basu, Mr. P. C.
Bhaduri, Mr. J. L.
Brahmachari, Mr. P.
Chatterjee, Mr. B. K.
Mitra, Mr. A. K.
Watling, Mrs. R. G.
and others.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of forty-five presentations of books, etc., which had been placed on the table for inspection.

The General Secretary reported that the following candidates had been elected Ordinary Members during the recess months, under Rule 7 :—

(37) *Sahaya, Shyamnandan*, B.A., Businessman, Agent, New India Assurance Co., Ltd., Bombay, and Agent, The National Banking and Loan Co., Ltd., Calcutta; Bank Road, Patna.
Proposer: Paramananda Acharya.
Seconder: B. S. Guha.

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(38) *Mansoor Uddin, Muhammad*, M.A., Sub-Inspector of Schools, P.O. Khalilpur, Pabna.
Proposer: Aga Md. Kazim Shirazi.
Seconder: M. Mahfuz-ul Haq.

(39) *Austin, George John*, Sanitary Engineer, Messrs. J. B. Norton & Sons, Ltd., Norton Building, Lalbazar, Calcutta.
Proposer: H. Hobbs.
Seconder: Johan van Manen.

(40) *Rahman, Shah Kalimur*, M.A., Lecturer in Arabic and Persian, Calcutta University, 8, Golam Sovan Lane, Calcutta.
Proposer: M. Mahfuz-ul Haq.
Seconder: M. Hidayat Hosain.

(41) *Quirke, John Patrick Francis*, Stock-broker, Messrs. Place, Siddons & Gough; Calcutta Club, 241, Lower Circular Road, Calcutta.
Proposer: Johan van Manen.
Seconder: K. C. Mahindra.

(42) *Newman, Carl Damien*, M.B.B.S., D.T.M. & H., District Medical Officer, E.B. Ry., 1/1, Old Ballygunge Road, Calcutta.
Proposer: R. Knowles.
Seconder: H. W. Acton.

(43) *Mackenzie, Arthur Henderson*, C.I.E., M.A., B.Sc., A.R.C.S., I.E.S., Director of Public Instruction, U.P., Officiating Educational Commissioner with the Government of India, Simla.
Proposer: R. B. Seymour Sewell.
Seconder: U. N. Brahmachari.

The General Secretary reported the deaths of:—

10. Rai Saheb Debakar Dey (An Ordinary Member, 1928).
11. W. H. Miles (An Ordinary Member, 1884).
12. Lt.-Col. D. C. Phillott (A Life Member, Ordinary Fellow, 1889).
13. R. D. Mehta (A Life Member, 1886).

Mr. H. E. Stapleton read an obituary notice of Lt.-Col. D. C. Phillott, written by Dr. M. Hidayat Hosain. (Vide page clxxx.)

The General Secretary read an obituary notice of Mr. R. D. Mehta, written by Sir J. C. Coyajee. (Vide page clxxxiii.)

The General Secretary reported the following loss of membership during the recess months by resignation:—

(30) J. N. Becker (An Ordinary Member, 1926).
(31) P. M. Chatterjee (An Ordinary Member, 1929).
(32) K. Zachariah (An Ordinary Member, 1928).
(33) E. F. Oaten (An Ordinary Member, 1925).
(34) Oswald Martin (An Ordinary Member, 1920).

In accordance with Rule 40, the General Secretary announced that the name of the following Ordinary Member would be removed from the Society's next member list:—

(1) Wilhelm von Pochchammer (An Ordinary Member, 1925).

The General Secretary reported that, in accordance with Rule 4 of the Medal Regulations, the Council had appointed Advisory Boards for the Medals for this year to be as follows:—

(*a*) *Annandale Memorial Medal.*

1. Dr. B. S. Guha.
2. Dr. S. L. Hora.

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3. Col. R. Knowles.
4. Col. R. B. S. Sewell.
5. Mr. Johan van Manen.

(*b*) *Sir William Jones Memorial Medal.*

1. Dr. S. L. Hora.
2. Dr. W. A. Jenkins.
3. Dr. B. S. Guha.
4. Col. R. Knowles.
5. Col. R. B. S. Sewell.
6. Dr. U. N. Brahmachari.
7. Mr. Johan van Manen.

The following papers were read :—

(1) Bajrakumar Chatterjee.—*The Social and religious institutions of the Kharias.*

(2) Provash Ch. Basu.—*The Social and Religious Ceremonies of the Chakmas.*

(3) E. N. Ghosh.—*Studies on Rigvedic Deities. V. Dāsas and Asuras killed by Indra.*

(4) P. C. Nahar.—*A Trilingual Inscriptions from Barhnagar, near Murshidabad.*

(5) J. C. Sinha.—*Jute in early British Days.*

(6) J. L. Bhaduri.—*Observations on the Course of the facial Vein and the Formation of the external jugular Vein in Common Frogs and Toads of Bengal.*

(7) M. N. Acharjie.—*A short Note on the red-billed Chough,* Pyrrhocorax pyrrhocorax (*Linn*).

(8) D. D. Mukherji.—*Some Observations on the burrowing Toad,* Cocapus globulosus (*Linn*).

The Chairman announced that a meeting of the Medical Section had been arranged for to be held on Monday, the 10th November, at 6 P.M.

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DECEMBER, 1930.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 1st, at 5-30 P.M.

Present.

Rai Upendra Nath Brahmachari Bahadur, M.A., M.D., Ph.D., F.A.S.B., Vice-President, in the Chair.

Members :

Agharkar, Dr. S. P.
Asadullah, Mr. K. M.
Bose, Mr. M. M.
Chakravarti, Mr. Chintaharan
Chakravarti, Mr. Nilmani
Chanda, Rai Bahadur R. P.
Chatterji, Mr. P. P.
Chaudhuri, Mr. J.
Das-Gupta, Mr. H. C.
De, Mr. K. C.
Hora, Dr. S. L.
Manen, Mr. Johan van
Ray, Kumar S. K.
Ray-Chaudhuri, Mr. H. C.
Shaha, Dr. B. B.
Siddiqi, Dr. M. Z.
Wadia, Mr. D. N.

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The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of seven presentations of books, etc., which had been placed on the table for inspection.

The following candidate was balloted for for election as an Ordinary Member:—

(44) *Roy, Kumar Kamalranjan,* B.A., Zemindar, Kasimbazar, Dt. Murshidabad.
Proposer: Saradindu Mukerji.
Seconder: Haraprasad Shastri.

The General Secretary reported the following loss of membership during the last month by resignation:—

(35) S. K. Belvalkar (An Ordinary Member, 1915).

The following papers were read:—

1. Ekendra Nath Ghosh.—*Studies on Rigvedic Deities. VI. Diti and Aditi.*
2. U. N. Brahmachari and J. M. Das Gupta.—*Synthesis of a few Antimonials of Therapeutic Interest.*
3. Nilmani Chakravarti.—*A note on the Identity of Jambavati, a Wife of Krishna.*
4. A. Banerji-Sastri. —*Dhenkānāl Grants of Raṇastambha and Jayastambha.*
5. Ramaprasad Chanda.—*Non-Vedic Elements in Brahmanism.*
6. Chintaharan Chakravarti.—*A note on the age and authorship of the Tantras.*

The Chairman announced the result of the ballot for the election of the Ordinary Member and declared the candidate duly elected.

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OBITUARY NOTICES.

Douglas Craven Phillott.

(1860–1930.)

Lt.-Col. Douglas Craven Phillott, M.A., Ph.D., F.A.S.B., M.R.A.S., who passed away in September, 1930, was born on the 20th June, 1860. He was a man of versatile genius. Educated at Felsted and Sandhurst he entered as a matter of course into His Majesty's Army and rendered excellent services in many capacities during the long years of his official career. He served with the 40th Foot (2nd Somersetshire); the 28th Punjab Infantry, and 3rd Punjab Cavalry; served with Durham Column, Zhob Valley Field Force 1890; Deputy Assistant-Quarter Master-General, Int., Hazara Field Force; where for meritorious action he was awarded a medal and a clasp in 1891. He also served in North-Western Frontier of India from 1897-98 and received a medal and two clasps.

Lt.-Col. Phillott also possessed diplomatic skill of a high order. For two years he was British Consul in Persia and in that capacity rendered conspicuous services to the Empire. He was also employed in the India Office for sometime. Later on he was employed as the Chief Censor, Prisoners of War Central Bureau in Cairo; and as Chief Censor Indian Base at Port Said (1914–19). In both these capacities he rendered excellent service and was awarded two medals.

A brave and gallant officer Lt.-Col. Phillott was not mere soldier. Indeed the real greatness of the Colonel lay, to my mind, not so much in his ability as a soldier but in his character and in his love for Oriental culture. I had the fortune of coming in very close contact with him not for a day or a week but for years together. We often worked together, travelled together and I always found him the kindest and most generous of men. Whether we were at Colombo in Ceylon or here in the Metropolis I always found in him a genial friend and a sound scholar. He was, moreover, a very liberal-minded man and never considered his Indian friends and co-workers as belonging to an inferior race. Indeed it was this trait in his character which alone won for him so many friends and admirers amongst the Indians.

Amongst Orientalists Lt.-Col. Phillott is remembered more as a savant than as a soldier. Early in his official career he developed an ardent love for Persian Literature and Culture and to it he devoted all his rare moments of leisure. Indeed he came to love it more than anything else; and as we worked

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together, it often seemed to me that his persistent refusal to marry was due to his apprehension that marriage would stand in the way of his studies.

Lt.-Col. Phillott soon showed that he could wield the pen with as much facility as the sword. He wrote and spoke Persian like an inhabitant of Persia itself. No wonder that he soon secured a gold medal for his proficiency in Persian and another for Urdu. He made Persian Philology and Grammar his special subject. Besides numerous articles—many of which were published in the Society's Journals and Memoirs—he wrote a monumental work on Persian Grammar and Philology. It is the most authoritative book on the subject and bears eloquent testimony to his scholarship, intelligence, and diligence.

His reputation as a Scholar in Persian brought him fresh honours. From 1905 to 1912 he was employed as the Secretary of the Board of Examiners. Trustee and Treasurer of the Indian Museum, Calcutta, Fellow and Lecturer in Persian, Calcutta University, and General Secretary and Philological Secretary of the Asiatic Society of Bengal,—these were some of the posts which he was called upon to fill on account of his scholarship; and in all these capacities he earned the respect, admiration, and love of all who came in contact with him. In recognition of his erudition the Asiatic Society elected him to be a Fellow in 1910. He travelled extensively in the East. After retirement from Indian Army he was appointed a Lecturer in Hindustani of the Cambridge University in 1912, which post he filled with brilliant success till he died.

In his death, Oriental Culture, specially Persian Literature and Culture has lost an ardent devotee, and Indians have lost a sincere friend. To me it is a personal bereavement and I mourn his death as the loss of a friend, philosopher, and guide.

The following is a list of his contributions and works :—

ASIATIC SOCIETY'S PUBLICATIONS. JOURNAL (NEW SERIES).

Vol. II, 1906.

A Muslim Charm (Arabic) suspended over the outer door of a dwelling to ward off plague and other sicknesses.
A Note on the mercantile sign language of India.
A Persian non-sense rhyme.
Bibliomancy, divination, superstition amongst the Persians.
Notes on certain Shia *tilisms*.
Note on the common Kestril.
Notes on the Huma or Lammergeyer.
Note on the Jargon of Indian Horse-dealers.
Notes on the Houbara or Bastard.
Note on a quatrain of Umar-i-Khaiyam.
Note on the Sikandar Nama of Nizami.
Some Arab Folk Tales from Hazramaut.
Some lullabies and typical songs collected in Persia.
Some Persian riddles collected from the Dervishes in South Persia.
Some street cries collected in Persia.
Two Persian equivalents for Peter Piper.

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Vol. III, 1907.

A Note on sign, gesture, code, and secret language, etc., amongst the Persians.
Chapters on hunting dogs and cheetahs, etc.
Description of a Jam-i-Chehal Kalid, etc.
Methods of catching wild fowls, herons and other water-birds in the Punjab, Sindh, and Kashmir.
Indian hawking-gloves.
Note on the blue or common heron.
Note on Indian hawk-bells.
Note on the common English merlin.
Note on the common raven.
Notes on the large falcon.
Note on the Shaugarf falcon.
Note on the red-headed merlin.
Note on the Saker or Cherrug falcon.
Notes on the Shahin falcons.
On hunting dogs, etc.
Seven stories from the Nafhat-ul-Yaman, etc.
Some birds and other animals that have been metamorphosed, etc.
Some Folk Tales from Hazramaut.
The Birds' complaint before Solomon, etc.
Things which the owners of hawks should avoid, etc.

Vol. IV, 1908.

Eastern hoods for hawks.
Hindustani-English vocabulary of Indian birds.
Note on the Drum in Falconry.
Note on the Peregrine, falcon.
The Shrine of Tan Sen.
Translation of a letter by Abul Fazl.
Translation of one of the Tardiyat or poems on sport of Abu Nuas, etc.

Vol. VI, 1910.

Murgh Nama.
Vocabulary of technical falconry terms in Urdu, Persian, and Arabic.

Vol. VII, 1911.

Some notes on Urdu Grammar.
Note on a Shia imprecation.

Memoirs of the Asiatic Society of Bengal.

Vol. I.

Common saws and proverbs collected chiefly from Dervishes in Southern Persia.
Some current Persian tales told by professional story-tellers.
Plan of a Persian gentleman's house.

Other Publications.

1. Colloquial English-Persian Dictionary in the Roman character, Calcutta, 1914.
2. Higher Persian Grammar, Calcutta, 1919.
3. Hindustani Manual, Calcutta, 1910.
4. Hindustani Stumbling-blocks, London, 1909.

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5. Manual of Egyptian Arabic, Cairo, 1926.
6. Hindustani exercises for the proficiency and high proficiency with notes and translation, Calcutta, 1912.
7. Khazinae Muhawarat, or Urdu idioms, collected and translated, Calcutta, 1912.
8. Translation of the Vazir of Lankuran, a play in four acts, translated from Persian into Urdu.
9. The Farasnama-i-Rangin, or the Book of the Horse Translated from Urdu, London, 1911.
10. From Sepoy to Subedar, Edited, Calcutta, 1911.
11. The Baz Nama-i-Nāsiri, Translated, London, 1908.

M. HIDAYAT HOSAIN.

(*Read in the Ordinary Monthly Meeting, 3rd November,* 1930.)

R. D. MEHTA.

(1849–1930.)

The death of Mr. R. D. Mehta is a loss alike to Calcutta Society and to the Parsi community. He was one of the best of those Parsi "*Shethiahs*" who were the leaders of their community and who were characterised by enterprise, ability, and public spirit. Born in 1849 he came to Calcutta with his father, and got his education in the Bengal Academy. He then got apprenticed to the firm of Messrs. Apcar & Co. In 1870 he was sent by his father to Hong-Kong to open and manage a branch office of his Calcutta firm. On his return he acquired further experience in his father's business and proceeded to England in order to purchase machinery for starting the Express Cotton Mill. He was connected with a number of commercial enterprises in this city.

He was characterised by ample and many-sided energy. He was the Sheriff of Calcutta in 1893, and also had the honour of being the Persian Consul for several years. He was a distinguished Mason and a particularly useful Member of Indian Freemasonry. He was a Governor of the Mayo Hospital, Vice-President of the British Indian Association, an Honorary Magistrate and Justice of the Peace, Chairman of the Alipur Local Board from its formation in 1886 until 1918, and Chairman of the Manicktollah Municipality from 1900 up to 1907. He was a Life Member of the Asiatic Society of Bengal.

His was indeed a long and honourable career filled with and distinguished by private enterprise and public activity.

J. C. COYAJEE.

(*Read by the General Secretary in the Ordinary Monthly Meeting, 3rd November,* 1930.)

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PROCEEDINGS OF THE MEDICAL SECTION MEETINGS, 1930.

JANUARY, 1930.

A meeting of the Medical Section of the Asiatic Society of Bengal was held on Monday, the 20th, at 5-30 P.M.

PRESENT.

RAI UPENDRANATH BRAHMACHARI BAHADUR, M.A., M.D., Ph.D., F.A.S.B., in the Chair.

Members :

Chopra, Lt.-Col. R. N.
Connor, Sir Frank
Knowles, Lt.-Col. R.
Ottens, Mr. N.
Sewell, Lt.-Col. R. B. S.
and others.

(There were also 29 visitors present.)

The minutes of the last meeting were read and confirmed.

The following papers were read :—

1. LT.-COL. V. B. GREEN-ARMYTAGE, M.D., F.R.C.P., I.M.S.—*Gynæcology and tropical Diseases in Shakespeare.*
2. LT.-COL. R. KNOWLES, I.M.S.—*The Evolution of Medical Protozoology.*
3. RAI UPENDRA NATH BRAHMACHARI BAHADUR, M.A., M.D., Ph.D., F.A.S.B.—*Studies in Kala Azar and the Chemotherapy of Antimony. II. The Treatment of Kala Azar with intramuscular Injection of N-phenyl-flycine-amide-p-stibinate of Sodium.*

FEBRUARY, 1930.

A meeting of the Medical Section of the Asiatic Society of Bengal was held on Monday, the 10th, at 5-30 P.M.

PRESENT.

LT.-COL. R. B. SEYMOUR SEWELL, M.A., Sc.D. (Cantab.), M.R.C.S., L.R.C.P., F.L.S., F.Z.S., I.M.S., F.A.S.B., in the Chair.

Members :

Brahmachari, Dr. U. N.
Connor, Sir Frank
Doxey, Mr. F.
Knowles, Lt.-Col. R.
Mukherjee, Dr. S. K.

(There were also 17 visitors present.)

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The minutes of the last meeting were read and confirmed.

The following paper was read :—

1. Lt.-Col. R. Knowles, I.M.S.—*Studies in the World Distribution of Malaria.*

The paper was illustrated by lantern slides and maps illustrating the continental and sub-continental distribution of the three species of malaria parasite in man.

At the conclusion of the paper, the Chairman made a brief comment on it.

—◇—

APRIL, 1930.

A meeting of the Medical Section of the Asiatic Society of Bengal was held on Monday, the 14th, at 6 P.M.

Present.

Lt.-Col. R. B. Seymour Sewell, M.A., Sc.D. (Cantab.), M.R.C.S., L.R.C.P., F.L.S., F.Z.S., I.M.S., F.A.S.B., President, in the Chair.

Members :

Acton, Lt.-Col. H. W.
Ahmad, Dr. D.
Brahmachari, Dr. U. N.
Chopra, Lt.-Col. R. N.
Cooper, Mr. H.
Ghosh, Mr. T. P.
Goil, Lt.-Col. D. P.
Knowles, Lt.-Col. R.
Mallya, Dr. B. G.
Mukherjee, Dr. S. K.
Seth, Dr. T. N.
Shaha, Dr. B. B.

(There were also 5 visitors present.)

The minutes of the last meeting were read and confirmed.

The following papers were read :—

1. Lt.-Col. R. N. Chopra, M.A., M.D., I.M.S.—*Addiction to* "Post" (*unlanced Capsules of* Papaver Somniferum) *in India.*
2. Rai Upendra Nath Brahmachari Bahadur, M.A., M.D., Ph.D., F.A.S.B.—*The Antimony-laden Cells of the Spleen after intravenous Injection of metallic Antimony.*

—◇—

SEPTEMBER, 1930.

A meeting of the Medical Section of the Asiatic Society of Bengal was held on Monday, the 8th, at 5-30 P.M.

Present.

Lt.-Col. H. W. Acton, I.M.S., in the Chair.

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Members :

Doxey, Mr. F.
De, Dr. J. C.
Knowles, Lt.-Col. R.
White, Dr. Ronald Senior
Urchs, Dr. Oswald
and another.

(There were also 19 visitors present.)

The minutes of the last meeting were read and confirmed.

The following paper was read :—

1. Lt.-Col. R. Knowles, I.M.S. and Dr. B. M. Das-Gupta.—*Studies in the untreated Malaria.*

The paper was illustrated by tables in the form of lantern slides.

—◇—

NOVEMBER, 1930.

A meeting of the Medical Section of the Asiatic Society of Bengal was held on Monday, the 10th, at 6 P.M.

Present.

Rai Upendra Nath Brahmachari Bahadur, M.A., M.D., Ph.D., F.A.S.B., in the Chair.

Members :

Ghose, Mr. T. P.
Khambata, Dr. R. B.
Knowles, Lt.-Col. R.
Mallya, Dr. B. G.
Sewell, Lt.-Col. R. B. S.
Shaha, Dr. B. B.
Ukil, Dr. A. C.

(There were also 6 visitors present.)

The minutes of the last meeting were read and confirmed.

The following papers were read :—

1. Lt.-Col. R. N. Chopra, I.M.S. and Dr. J. S. Chowhan, M.B.B.S.—*The Pharmacological Action of the Venom of the Indian Cobra* (N. Naia vel Tripudians) *on certain Protozoa.*

2. Rai Upendra Nath Brahmachari Bahadur, M.A., M.D., Ph.D., F.A.S.B.—*The Action of certain Quinoline Compounds on Paramoecia.*

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